MECCANO® MAGAZINE

VOL.65 No.1 October 1980 £1

NEW

POCKET SIZED
ACTION PACKS-FULL DETAILS INSIDE

Britain's biggest and best range of construction kits

MECCANO MAGAZINE

Vol. 65. No. 1 October 1980

ON THE COVER: An out-of-this-world setting forming an effective backdrop to examples from the all-new Action Packs range. The 'Space' theme is one of infinite possibilities and a generous proportion of the entire Action Packs range is devoted to models of this nature. Rockets, Missiles and Spacemen previously only available in main sets come down to earth in price to bring plenty of Meccano Action in pocket-money Action Packs!

EDITOR
MICHAEL J. WALKER

READERS of the Meccano Magazine will no doubt have noticed that this issue is dated exactly one year on from the previous number, October 1979. No, the Magazine hasn't switched from quarterly to annual publication, rather, it has been delayed by the closure of the Binns Road Meccano factory and the switch-over of production to other sites within the UK.

It is very important to stress that there is no cause for concern regarding the future production of Meccano, nor of Meccano Magazine. Exciting new ranges of Meccano products have been planned for many months now and the first of these, Action Packs, forms the basis of a feature in this issue. Meccano Magazine subscribers are assured that they will receive the full number of issues for their subscription regardless of the time factor, ie anyone who paid an 'annual' subscription immediately prior to Binns Road closure will receive the full four Magazines etc. This Magazine definitely counts as only one issue!

The 'MM' certainly has had its ups and downs over the years, but through it all it has had the sterling support of Meccano modellers the world over. I'm sure that, in time, the recent break in publication will be seen as just one little episode in its chequered career. My policy as Editor will be to continue to bring you the best in informative, entertaining articles covering as broad a spread of readers' interests as possible.

Since becoming Editor some time ago I have been most impressed and gratified by the excellent way in which Meccano modellers have supported the Magazine by way of sending in material for consideration for inclusion. My mailbag contains potential material from all parts of the world, helping me to bring the wider world of Meccano into focus for 'MM' readers. If you have a model mechanism, or photographs of an interesting idea for a Meccano project why not drop me a line? Nothing beats the thrill of seeing your name heading an article in your favourite magazine!

Meccano Exhibition activity has been at a peak this Summer, reports on two of the shows, Leyland and Henley, appear in this issue. The next Meccano Exhibition on my calendar is the North Eastern Meccano Society show on Saturday 15th November 1980 at the Bondgate Hall, Darlington, Co. Durham. Open 11 a.m. to 7 p.m. Might see you there!

CONGRATULATIONS! A proud moment for Nick Rodgers of the Henley Meccano Society as he receives his prize of a Meccano outfit from Mr. K. L. Askwith, Managing Director of Airfix Products Ltd., at the Henley Meccano Show presentation. Mr. Askwith, (on the right) spent a most enjoyable afternoon touring the exhibits and made comment on the extremely high standard of models displays, when making his presentation speech. Geoff Wright, show sponsor, (on the left), was similarly delighted with the excellent support for the exhibition and pledged its continuation next year.

Contributions to Meccano Magazine

Meccano Magazine readers frequently enquire as to how best prepare material for submission.

Generally, any article of Meccano or engineering interest is welcome for consideration, and the text, (copy) should ideally be typed using double spacing on one side of A4 paper sheets.

Photographs should be of good contrast in black and white.

Further details, including current payment rates, can be obtained from the Editor at the address below.

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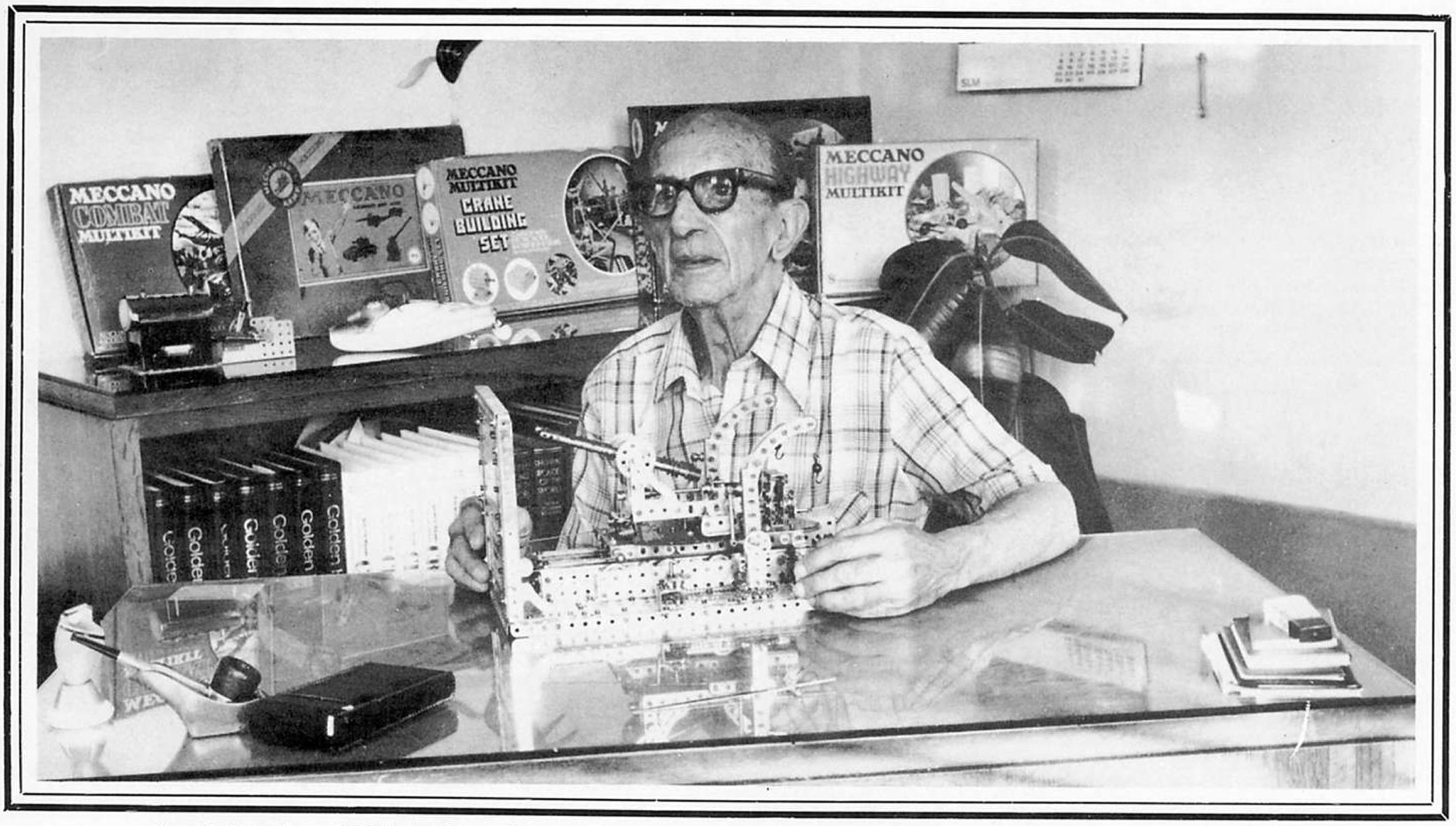
MECCANO IN MALTA

By Joseph Manduca, A. & C.E.



Joseph Manduca of Malta is pictured here in his study with one of his favourite models—disappearing guns mechanism.

LONG ago in the March 1963 issue of Meccano Magazine, I wrote an article about myself in the series 'Meccano and Me'. This time I write an updated account of the Meccano scene in Malta, about myself, and my hopes and ambitions for the fine hobby of Meccano modelling.

Malta is a small island of 119 square miles with a population of about 340,000. That is an average of 2857 per square mile, rather densely populated! Perhaps that is what creates a rather stuffy air when a south east wind blows. If so, then I am one of the culprits as I have 13 children! Notwithstanding my age I am still as keen on my No. 1 hobby as I was when I started meddling with Meccano some 67 years ago, and still going strong, touch wood.

In the old days the 'MM' was a bi-monthly and later on, a monthly magazine with 12 pages. This later grew to 100 pages and yet it still cost only 6d, (2½p today). What is even more important is that it used to be published on time, (Ouch! Ed). What I looked for most of all in each issue was the announcement of a new part which one could obtain in short time by applying direct to Binns Road.

Unluckily for all of us here in Malta, Meccano Ltd. stopped dealing directly with customers and we found ourselves 'shipwrecked' on our own island. I use this expression because there was not, and is not even now, a local agent; so nowadays we have to deal with dealers in the UK who sometimes, instead of supplying the goods, forward a card with the statement, 'Parts not yet available as spares, please re-order in a month's time'. What a consolation!

In the meantime one keeps one's fingers crossed, but I gave up this practice years ago as I was getting a permanent cramp which prevented me from building Meccano models. This is what one calls the age or progress, what I call it does not matter!

As matters stand a 'new-born' enthusiast can get the new parts by buying a whole set, while an 'old and faithful reliable' has to wait until the new parts become available as spares much later; business first, pleasure after, I suppose. I know there are great difficulties in issuing a Meccano Magazine or producing a new part and I criticise only with the best intention, I am happy to render any assistance in order to improve matters. All this because I would like to lift Meccano and all it stands for, (which is a great deal), to the very top of the world, and I'm sure that others are ready to help too.

I would like to discuss such matters with someone at Head Office. To meet such a man, or woman for that matter, I would do any sacrifice such as climb over a high mountain, rush through a blazing department store or simply meet him/her at the corner of a street, (if it is not raining at the time, of course!)

I was introduced to Meccano when I was less than seven years old. I got a small outfit with a few parts to keep me quiet in bed when I had a cold, and that started it all. Since that time everything that had gears always fascinated me, so much so that many of my father's clocks never ran again after my experimenting with their insides.

Luckily this infatuation did not last long but it

Balluta Buildings, St. Julian's Bay, Malta, the sun drenched home of the author.

helped me to become a fairly good handyman today. Later on I got a No. 2 outfit and my first 'MM', (No. 15, Nov-Dec 1920). The 'MM' then gave one something to do not only so far as models were concerned, as contests and competitions, building, drawing, photographic etc, were plentiful. I took part in almost every type of competition just for the fun of it and won many prizes, the most cherished being a silver medal with my name on it.

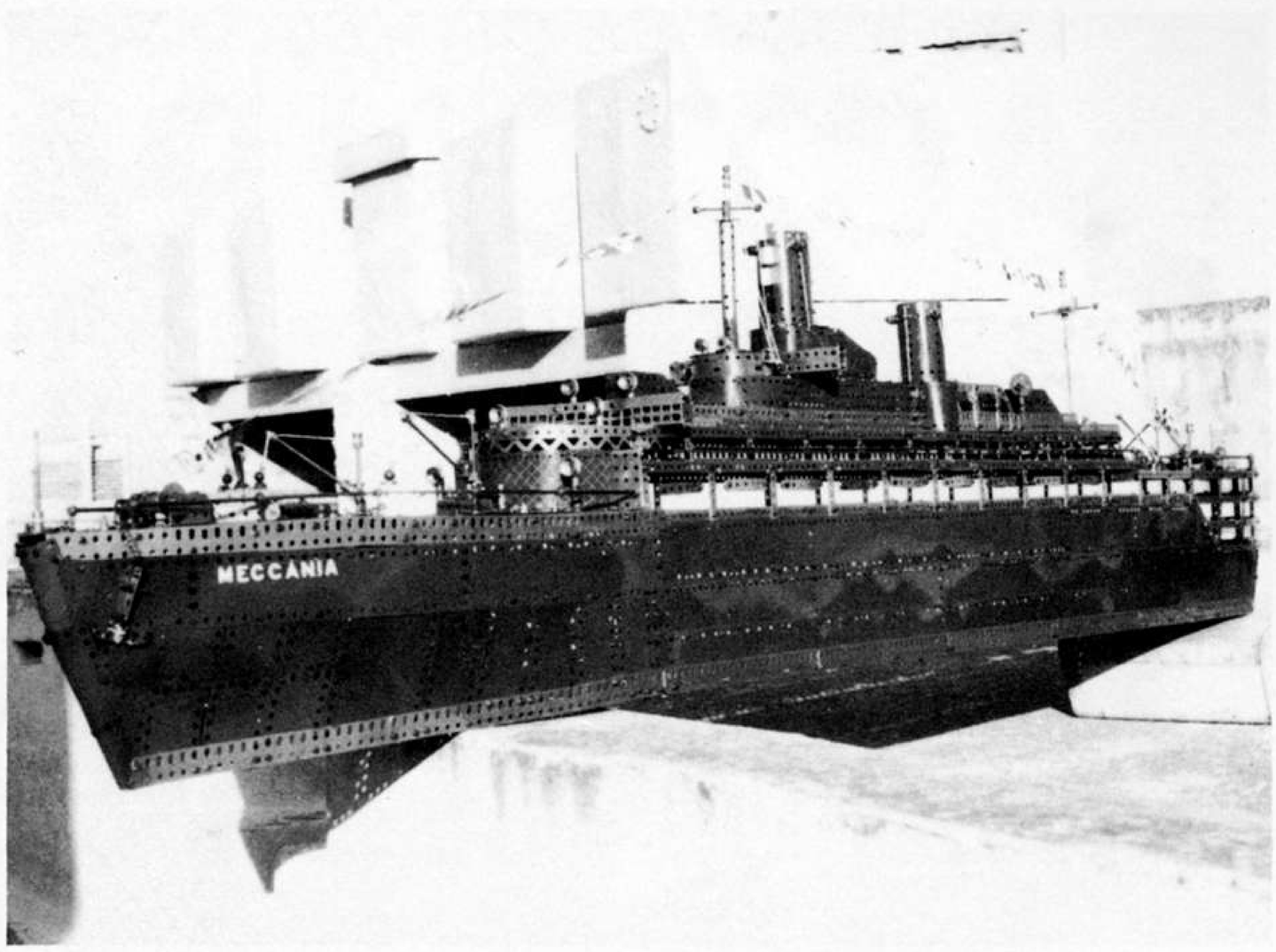
The best feature of these competitions was the fact that the prizes consisted of varying values of Meccano goods, so my set grew larger by degrees and so did my enthusiasm. I was also lucky in buying lots of assorted parts, and, naturally, added the new introductions as and when they came out. On one occasion I bartered a 1977 set 5 for a Mechanised Army Set of 1939 fame, and the result of a lifetime's collecting is that I now possess more than £2000 worth of Meccano, not including my complete collection of obsolete parts, every item of literature, and a full set of Meccano Magazines.

During the last war, on April Fool's Day 1942 to be exact, my house got a direct hit from a Stuka bomb which turned it into a mound of rubble in a matter of seconds. Luckily no-one was hurt because at the time my family and I were safe in a rock-hewn shelter. Believe it or not, under the rubble I managed to find my Meccano cabinet, flattened out by the weight of masonry above it, but the parts were still in their partitioned drawers.

Clearing the debris slowly and patiently as would an archaeologist, I salvaged a drawer at a time and transferred the contents to a sack, down to the last Nut and Bolt. I had to await the war's end in 1945 before I would be able to replace the parts in their partitions, in a brand-new cabinet which I still use today. Somehow when I found my Meccano I momentarily forgot about the loss of everything else!

In my opinion, Meccano's 'Golden Years' were from 1927-36. The materials used were of superior quality, heavier gauge and nickel-plated to prevent rusting. They were available in any quantity at any time, and relatively cheap too, Washers 1d for 12; Bevels 9d, etc. No coloured parts were supplied in the early nickel days, therefore there was no danger of scratches or marks left under Bolt heads.

Today's models though are more attractive to look at due to the coloured parts, but they do not feel so 'solid and majestic' as did those in the 'good old days'. Also, at that time, one could choose from hundreds of new models



'RMS MECCANIA'—a typically large and realistic model designed by Joseph.

from small ones to super size, as there existed the Books of Prize Models, leaflets etc. Due to the increasing cost of labour and materials the cost of the parts had to go up and up and so, in turn, did the sacrifices one had to make to obtain the desired parts.

Despite all the difficulties in supply and availability however, I still heartfully thank Meccano for the untold hours of pleasure it has given me during my 73 years of existence.

As to choice of models to build, I generally keep my eyes well open when I browse through engineering or other books. If I like the look of an item I study it carefully, roughly imagine the completed Meccano version in my mind, and start construction immediately. Sometimes it turns out well, other times, it could be a flop!

A disadvantage in living in Malta, not already mentioned, is that there is no Meccano club. Years ago there used to be one at the De La Salle College, but I was not a member then due to marriage and professional obligations taking up my time, and sadly the club disbanded some time later. The lack of a club and even of a Meccano stockist necessitates every enthusiast here, of which there are 5 or 6, to look upon himself as 'an island within an island'.

This is a great pity because there must be many excellent Meccano models which never get displayed and are simply photographed and dismantled, the photos being buried in a drawer in many cases, to be seen by no-one except their owner. I, as one such 'island', would dearly like to see one of those exhibitions such as are organised in the UK. The only source of contact with other Meccanoites and their models is through the 'MM', so please continue to publish it!

There was a shop in Malta, years ago, which handled a small amount of Meccano and I offered to assist him by placing my large LNER 10000 locomotive model in his shop window. He accepted, and the model displayed its Walschaerts' valve gear in motion for about three weeks, non-stop. It never failed even once, and I consider that a first-class tribute to the ruggedness of the old 20 V long-sideplate motor which powered it.

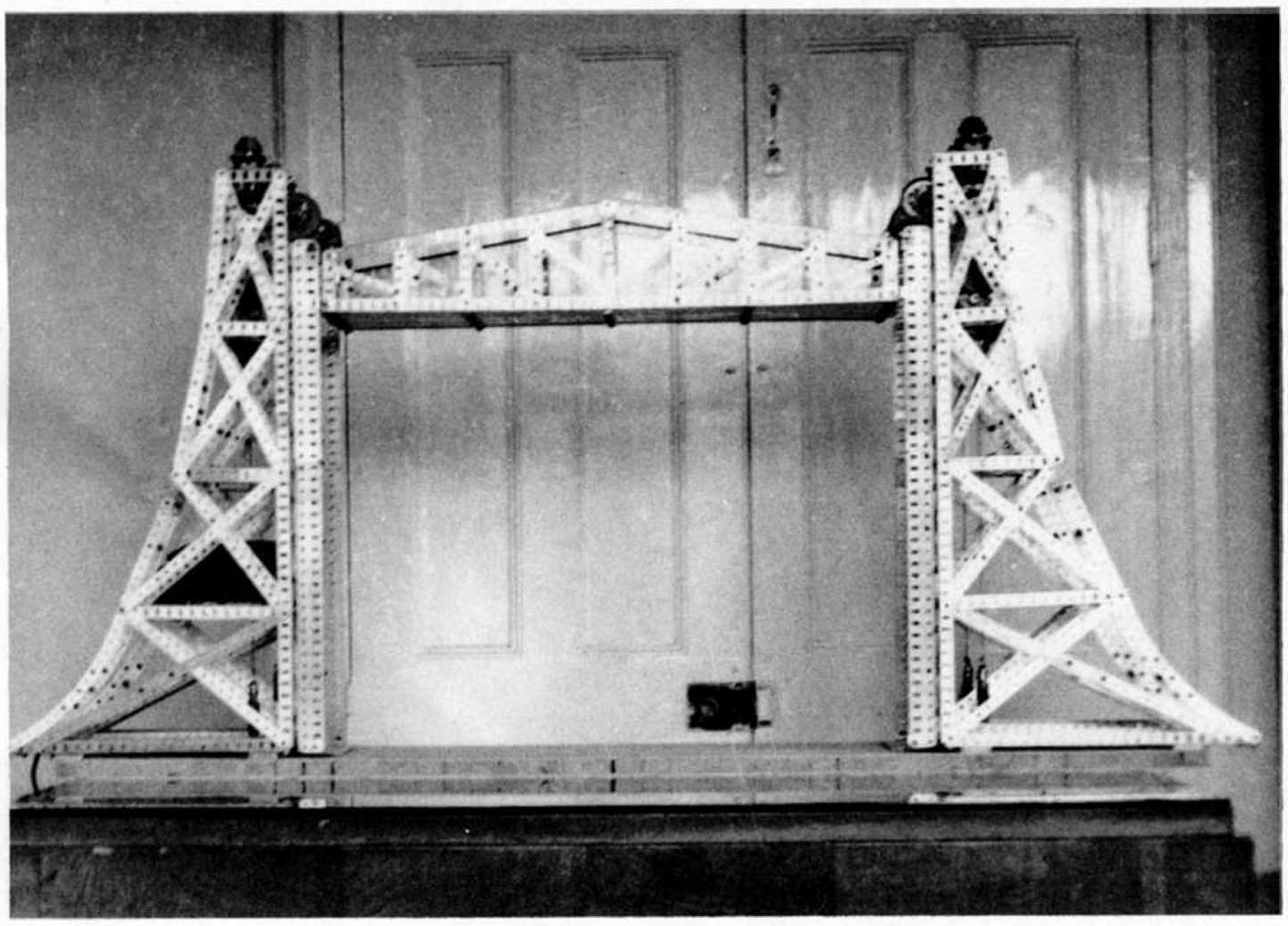
I still use that motor despite the suggestion of one of my friends that I should keep it in a museum, and in fact I'm quite sentimentally attached to it as it was one of the items I salvaged from the rubble of my bombed house! Some motor!

My den is fortunately largish but it is not all dedicated to Meccano, (I wish it were full of it). It is my study, my office, my rest room etc. All my Meccano parts are in cabinets and all the literature is housed in a specially tailor-made set of book shelves. I operate my models on a good sized glass topped table and invariably take photographs of them to fix in special albums.

At this point I'd like to say that if any enthusiast who happens to pass through my country would like to pay me a visit, I would be very pleased to meet him. My hospitality is inversely proportional to the lack of spare parts here, and that is saying something. I would like to mention a particular person who availed himself of this offer. Hans Hoch of Winterthur, Switzerland, found his way to my home after reading my article in the March 1963 'MM'. He has visited me several times and I have been his guest in Switzerland. (Remember the Crane on page 13 of the January 1978 MM?) It was built in 1976 when I was his guest and I lent a hand. We have, through Meccano, become great friends.

I wish the Meccano hobby every success and the best of the best in the future years to come.

Another one for the sheer size enthusiast, Joseph's Lifting Bridge.

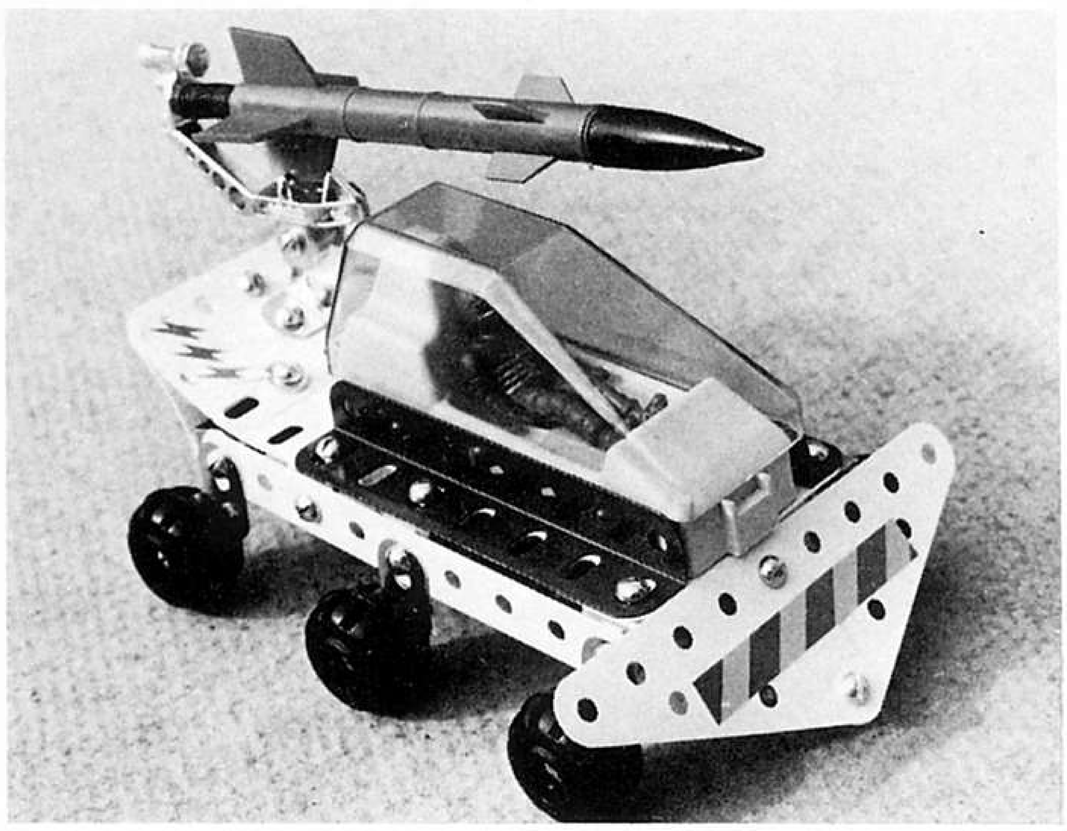


A NEW RANGE OF MECCANO PRODUCTS . . .

ACTION PACKS

Announced at the Henley Meccano Show in August 1980, an exciting and totally new concept in Meccano construction kits, Action Packs

Aimed specifically at the first-time buyer, Action Packs are pocket-money price mini-outfits of Meccano parts sufficient to make one model. A wide variety of different Action Packs are now available making possible the choice between such diverse subjects as a Cement Mixer and a Moon Marauder . . . this latter is one of a set of Space theme models incorporated within the range. Two series of Packs at two price levels have been introduced during the last two months and these are listed below:—



Series One Retail Price £1.95

Stellar Missile Pad
Star Striker
Lunar Chariot
Cement Mixer
Farm Tractor
Prairie Express

Series Two Retail Price £2.95

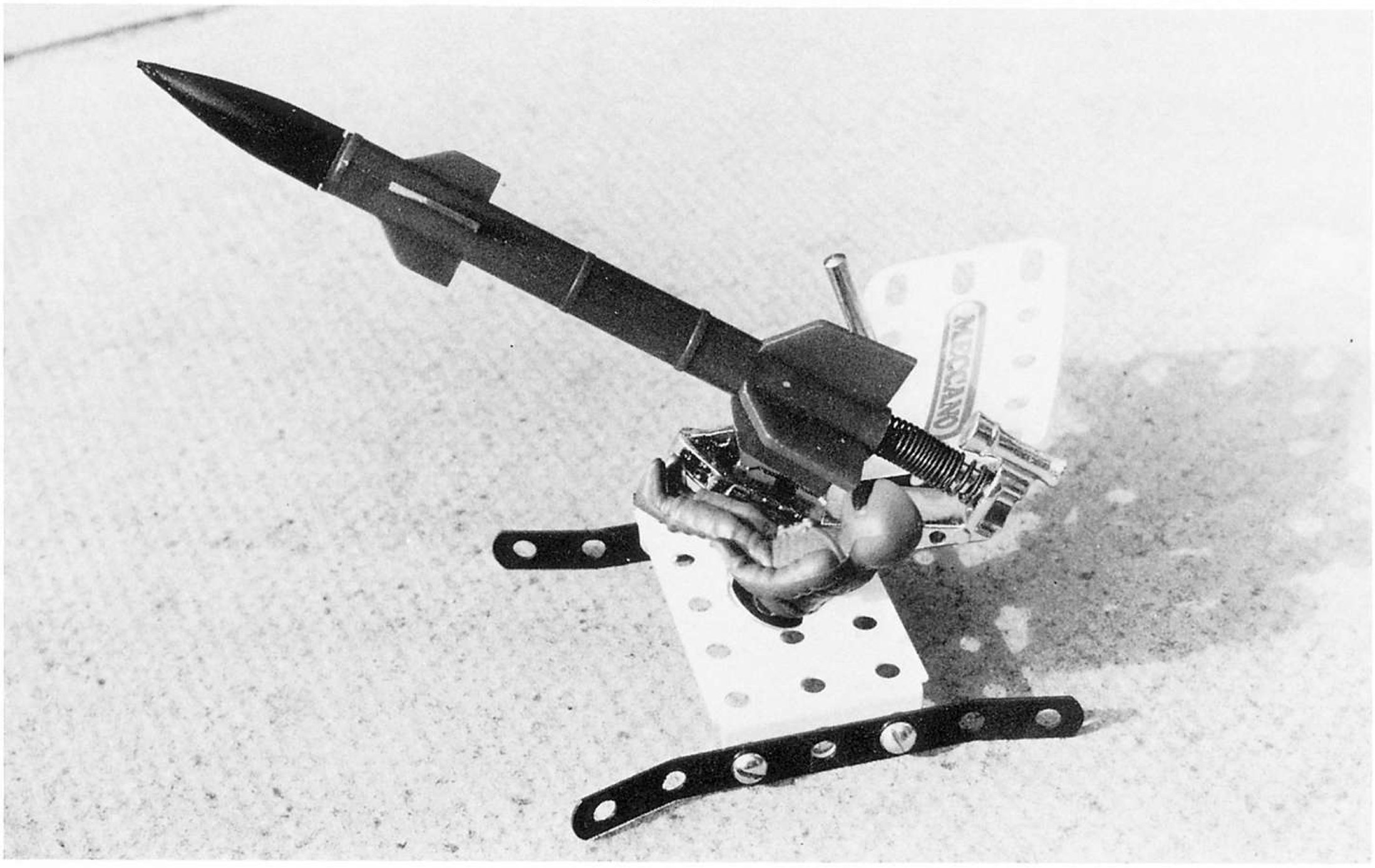
Mobile Rocket Launcher
Moon Marauder
Container Truck
Tractor and Trailer
Dragster
Stock Car Smasher
Cosmic Raider

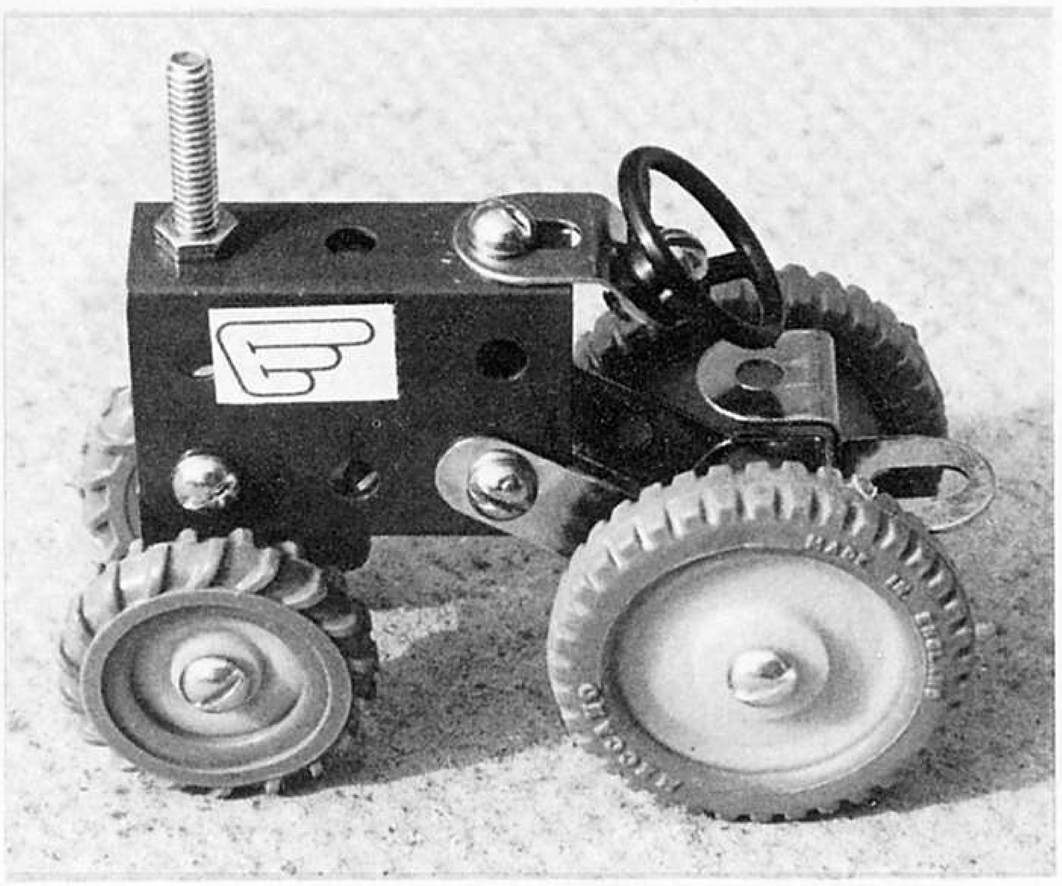
LEFT:

A big, chunky model with a punch . . . the Rocket actually fires. This is the Mobile Rocket Launcher . . . Series 2.

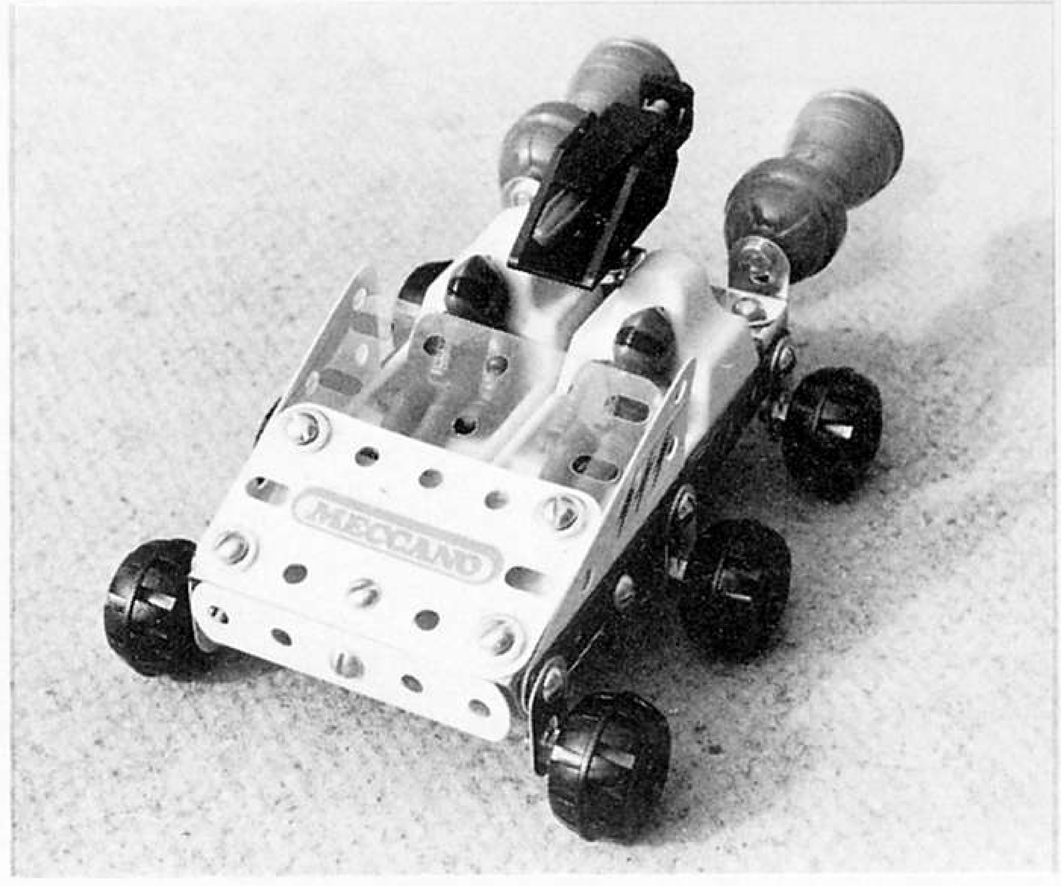
Boxed in attractive full-colour packs with a clear view of the completed model, Action Packs will appeal to every Hobby shop customer, not just those who intend to purchase Meccano initially. The cartons, which measure 11 x 8½ x 3½ cm for series one, 14½ x 11 x 3½ cm for series two, are slotted to permit easy display on a revolving rack stand. This has obvious advantages at the point of sale because the Packs can be situated on the shop floor in a prominent position, and the easy selection and removal of desired Packs from the display appeal to the 'impulse' purchaser. The low price of both series of Packs further enhances

BELOW: The very convincing-looking Stellar Missile Launcher.





Always a favourite, the Farm Tractor.



Moon Marauder with two Spacemen and firing Missile.

their attractiveness to younger and/or casual purchasers.

It has been said that the 'traditional' Meccano boxed sets tend to be bought as presents by parents for their children, rather than children themselves who tend to be 'pocket-money' purchasers. Although Meccano is an ideal purchase any time of year it is a fact that most large boxed outfits are bought during the Christmas period. 'Pocket-money' purchases however are not subject to seasonal variations and it is this market sector that Action Packs caters for. By making a fun toy with simple parts, the customer is introduced to the unique Meccano system, and once introduced, further purchases will undoubtedly follow.

In addition to providing an introduction to Meccano modelling in general, the varied range of models within Action Packs will appeal to the collector's instinct. The themes running through the range, Commercial Vehicles, Space etc, further assist in creating this interest. Acquisition of one Action Pack provides absorbing fun during the actual construction of the model and great play value in the durable finished product, but the purchase of more Packs make possible the kind of exciting play situation depicted on the front cover.

Each Action Pack is completely self-contained. The tools necessary to assemble the model are provided and in most cases consist of a combined Screwdriver/Spanner and a regular design Spanner.

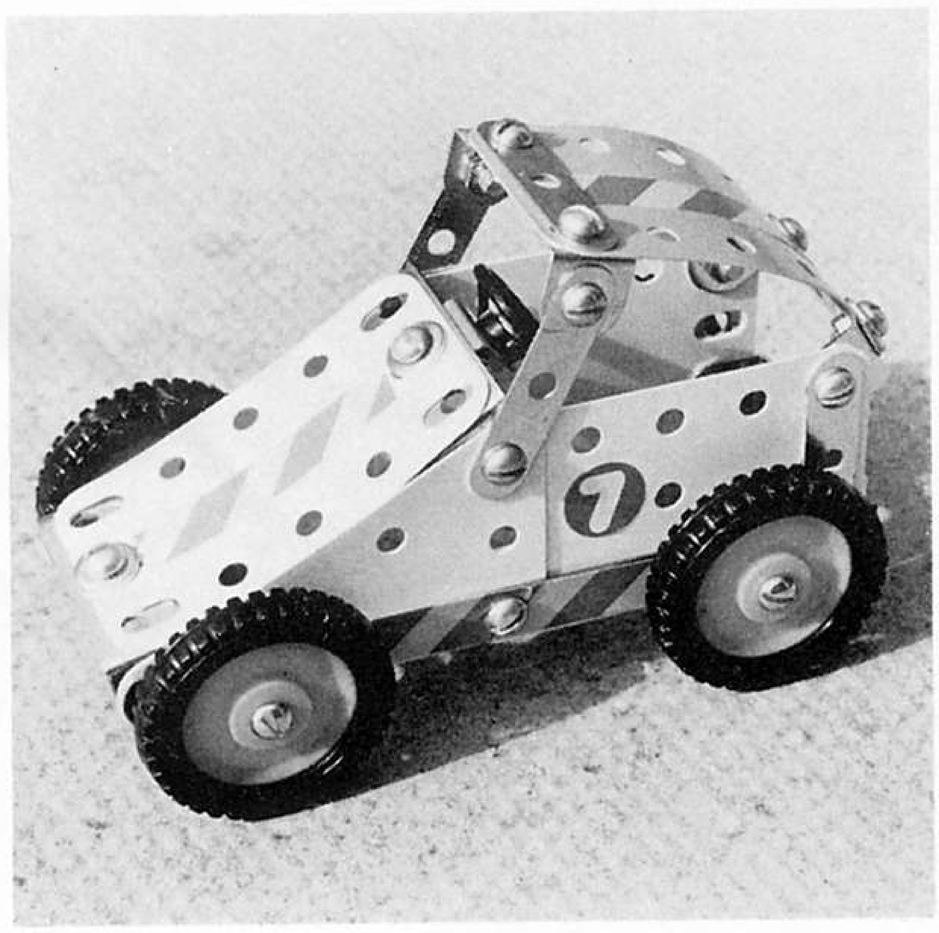
The instruction leaflets are very clear, using a diagrammatic style not dissimilar to the early 1970's instruction manuals. Guidance is given on the correct method of assembling lock-nuts and bending plates, both very useful to first-time buyers. All Action Packs contain a generous supply of stick-on labels with checks, stripes, figures, number plates and two Meccano labels, these last always much sought after and often the first to be used!

With all this emphasis on the first-time buyer, dyed in the wool enthusiasts may feel a little left out, but not a bit of it! The one-inch diameter chunky wheels found in some Action Packs are completely new, they will find many applications in advanced modellers' constructions. One hopes they will be given a part number and then find their way into the Dealers' cabinets for no enthusiast's Meccano set is now complete without a set of these! Few have yet seen the new design one-inch Pulley without boss, the Prairie Express model uses four of these to great effect. One-inch Pulley Tyres employed in some designs have a softer feel than before, the Farm Tractor uses a Steering Wheel previously only obtainable in Highway set cabs, and all Packs contain an interesting assortment of Meccano pieces which will find a ready application in the main outfit after the Pack model has been dismantled, (that's if you can bear to do so!)

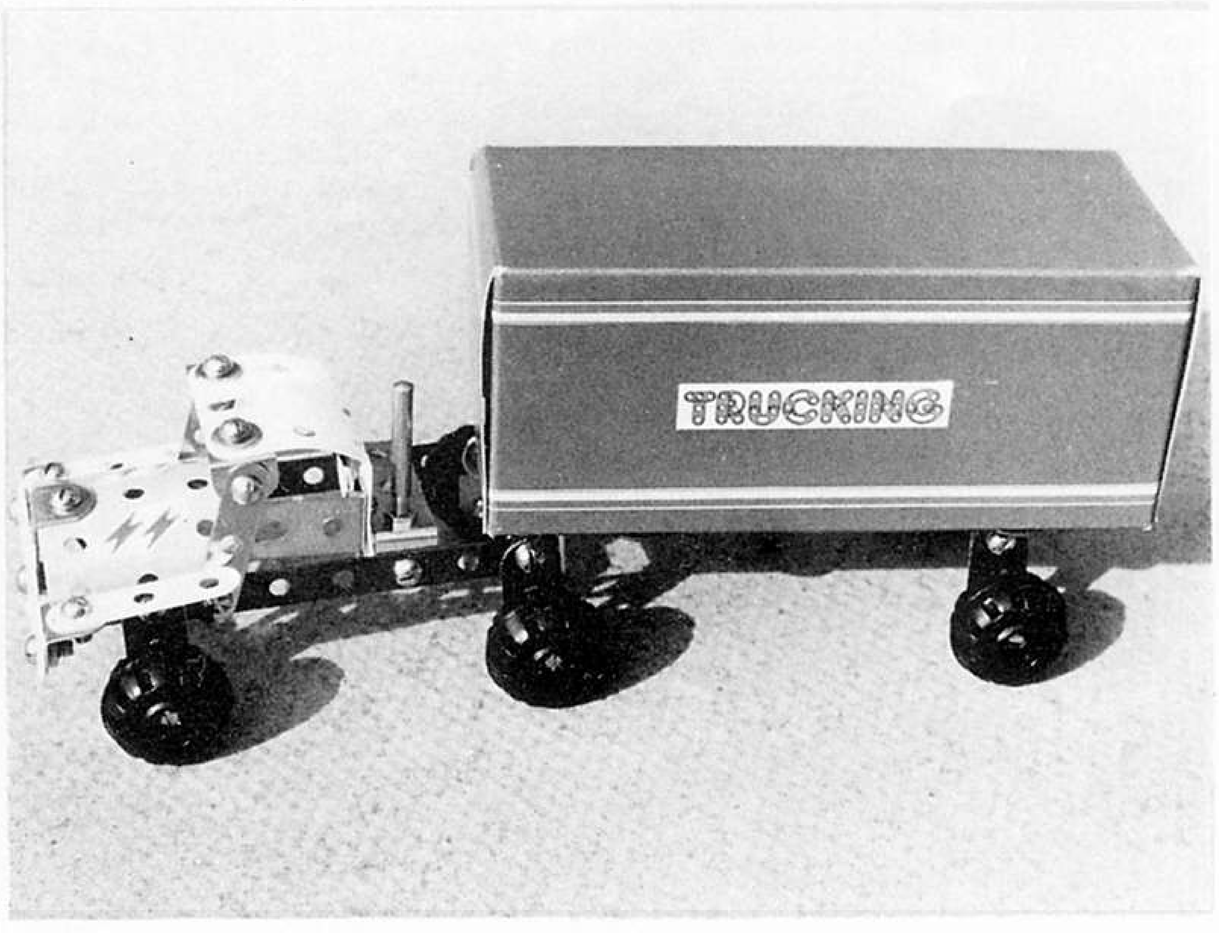
The Packs listed will be complemented in due course by further additions, including a third series using another Meccano 'first', a clockwork motor of truly remarkable capabilities. A pre-production sample, used in a prototype Dragster, exhibited quite staggering performance and proved a ready favourite with a 'test' audience of pupils at a Lancashire school! Scheduled for 1981 introduction, these will sell alongside the first and second series', plus their yet-to-be-announced additions, to make a comprehensive lineup of products occupying a strategic market sector new to the Meccano system.

As the name of the range implies, the accent very definitely is on action features ... the Rockets and Missiles fire, Mixer Drums rotate, the Stock Car features strengthened construction to resist the expected rough handling and all wheeled models, (if correctly assembled!) are purpose-built to speed along the floor, given a push. Without doubt one of the most significant developments in recent years, Action Packs will appeal strongly to those who want value for money, a wide choice of subjects, durable construction using quality parts and a finished model with plenty of ACTION!

Stock Car Smasher with reinforced construction.



This Container Truck has a container body punched with holes at standard spacing, and is one of a range of commercial vehicles.



('Cathedral Clock')

SKELETON HIPP CLOCK

By Dr. Keith Cameron.

THE Hipp Clock was invented by M. Hipp of Neuchatel in 1842. It is powered by a pendulum, the lower end of which has a soft iron armature which swings over an electromagnet providing the impulse. Near the midpoint of the pendulum a V-shaped trigger pivoted, riding over a notched raised section on a contact spring. When the pendulum has full swing, the trigger rides clear of the notch; when the swing shortens, the trigger catches in the notch, pushing the contact spring down, closing contact, and energising the magnet coils. The impulse gives the necessary pull to the armature and when it rides clear of the magnets, the trigger has passed from the notch thus breaking the circuit, and preventing any braking action by the electromagnet. See Diagram A.

A very compact Hipp Clock constructed in Meccano was described in the Meccano Magazine for January 1969 and in 'Model Building in Meccano' pages 124-127. The model to be described, however, incorporates several important modifications. Instead of a 'dimple plate' as originally described by Hipp and used in the 1969 model, a wedge piece is used and is located to one side of the neutral position of the pendulum, providing a more positive action. **TWO** contact springs are used, being formed in such a manner as to allow slight rubbing action at the contact points for a self-cleaning effect.

Instead of transferring the action direct to the ratchet through a spring, a gravity arm is used as in commercial clocks. However, the gravity arm is of new design, being inverted from its usual position to allow accurate running without need for critical levelling of the clock case. The clock is housed in an open frame to suggest the skeleton clock of the nineteenth century. No plates are used except in the base. Front and rear sections are held together by Plastic Rods and Screwed Rods to maintain open construction. A seconds hand is included.

BASE Figures 6, 7, 10

This measures 16½" wide by 9½" deep and is 2½" high. It is edged throughout by Angle Girders and Strips, composite ones being used for the long dimension. Sides and top are filled in with Strip Plates and Flexible Plates as shown and the top is strengthened on its under surface by four additional 9½" Angle Girders fixed from back to front. A space 2" x 1½" is left at the location shown for the electromagnets to protrude. A pair of 12½" Angle Girders are bolted to the upper surface of the base by their slotted holes. Between them a pair of 4½" Angle Girders 2 are fixed, also by their slotted holes.

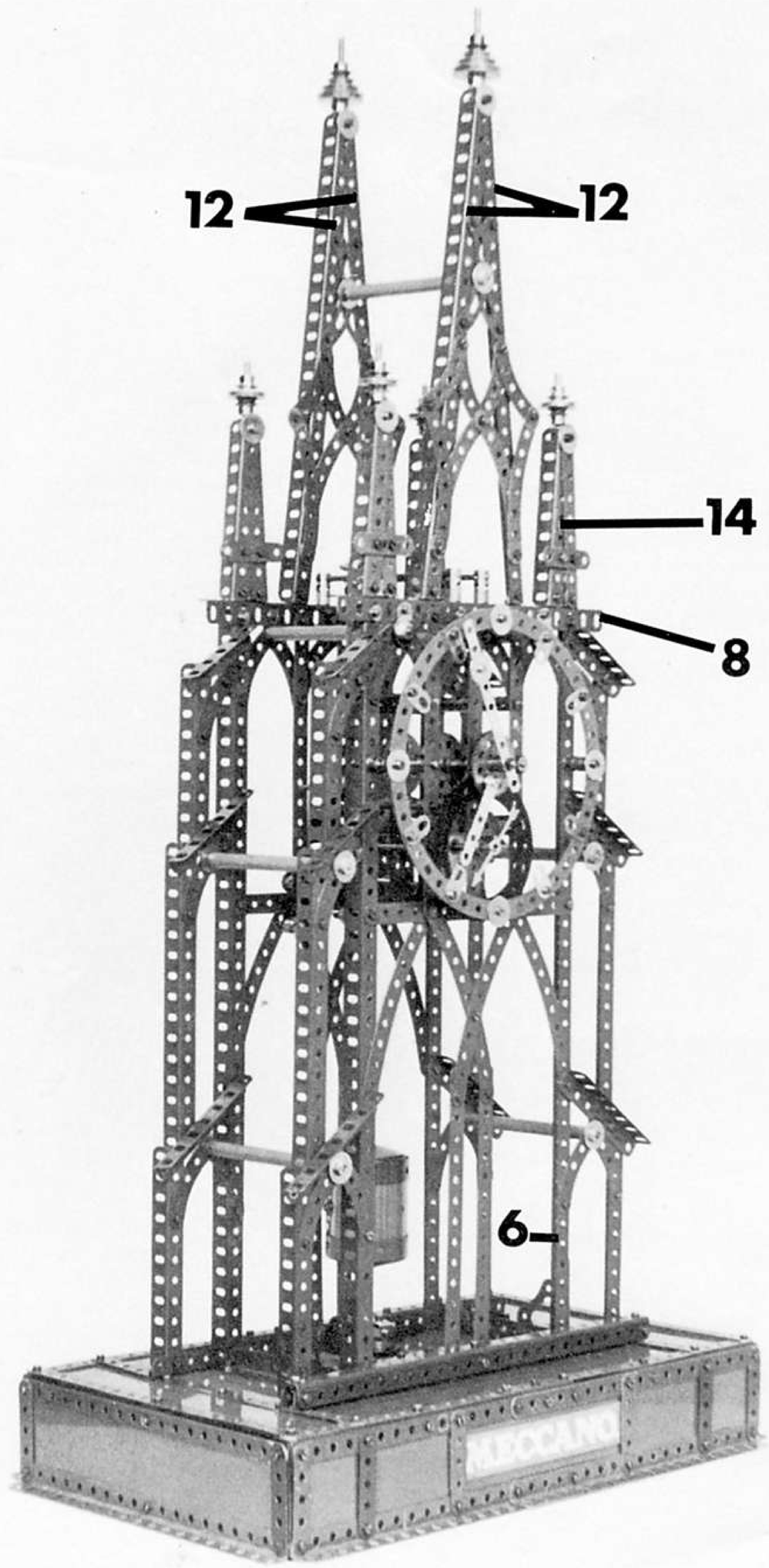


FIG. 1. Forward left hand 3/4 view of the Hipp Clock, designed by Dr. Cameron.

THE ELECTROMAGNET Figures 7, 8, 9

Two pairs of Cylindrical Coils are used, each pair connected by Bolts through their terminal eyelets. Follow Diagram B in making the connections. Each pair of Coils is bolted to the 1½" x 1½" Flat Plate as shown, the Bolts securing one set of Coils also fixing a 1½" Angle Girder 3 in place. The Bolts are screwed down through the threaded section of the base of the Coils, hand-tightened, and then passed through the Flat Plate and fixed firmly with Nuts. This is preferable to the practice of passing the Bolt up into the threaded section. Two pairs of Cores for Cylindrical Coils are lock-nutted together on 2" Screwed Rods, about ½" of the Rod being allowed to protrude.

These assemblies are now passed into the Coils, about five Washers added for spacing, and through the corresponding holes in the Flat Plate and 1½" Angle Girder. A yoke of five 1½" Strips 4 and a Fishplate are held on the Rods by Nuts. The Cores should project ¼" above the tops of the Coils. The 1½" Angle Girder 3 is bolted to the bottom row of holes of a 3" x 1½" Flat Plate 5 which is bolted above to the 12½" Angle Girder 1 and fixed below to two 2½" x ½" DA Strips bolted to the rear of the base.

BODY Figures 2, 4, 10

This consists of two sections, front and rear, almost identical. Slight differences between them will be indicated. They are bolted below

to the rear surfaces of the flanges of the 12½" Angle Girders 1 bolted to the top surface of the base. The main members are 18½" Angle Girders 6 with cross members being 7½" Strips 7 at the 15th hole down, and 9½" Angle Girders 8 at the top holes. Between the main members in the upper section are three vertical 7½" Strips 9 decorated at their upper ends by 2½" Curved Strips which are held to the 9½" Angle Girders 8 by Fishplates.

In the lower section are two vertical 7½" Strips 10 and four 5½" Curved Strips 11. In the rear section, these Strips are spaced to the rear at each point by a Collar to allow space for the pendulum bob. Outside the main members are placed, from below up, 5½", 7½" and 4½" Angle Girders, short sloping girders which are 3½", 3" and 2½" Angle Girders respectively, and each portion is finished by the addition of 2½" Curved Strips as shown. The front 18½" Angle Girders 6 are braced to 4½" Angle Girders 2 by Corner Gussets.

SPIRES Figures 1, 3, 4

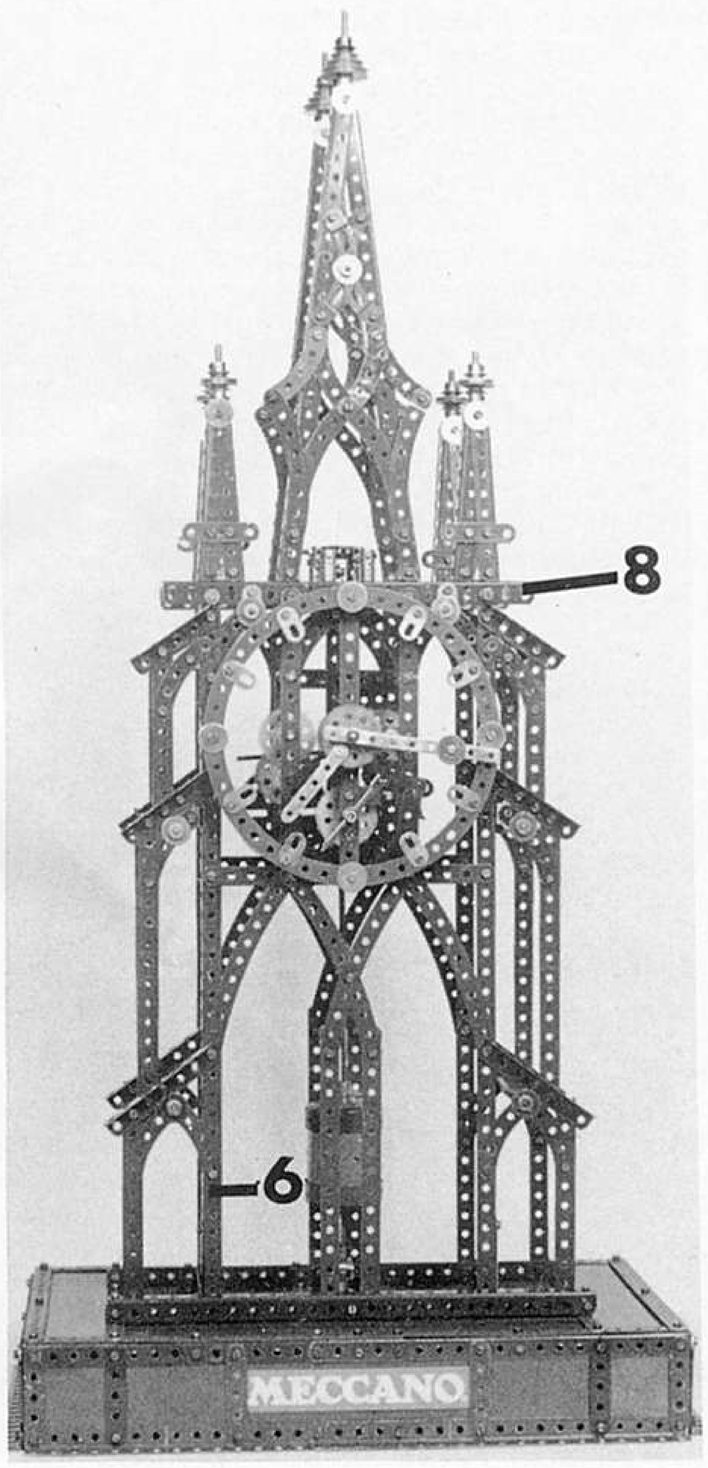
The central spire in each case is a pair of 12½" Angle Girders 12, fixed below by Angle Brackets to the 9½" Girders 8. A Bolt and ⅜" Washer secures the top ends by passing into the threaded bore of a Collar which holds a 2½" Rod on which is mounted a finial consisting of a Cone Pulley 13 and a ½" Pulley with Boss.

The spire is decorated with pairs of 4", 2½" and 3" Curved Strips as shown. Smaller spires are each made from a pair of 4½" Angle Girders 14 connected below to the 9½" Girder 8 by Angle Brackets, and holding finials above like the main spire, but using two ½" Pulleys with a 1" Pulley without Boss between them. 2" Strips decorate these small spires.

MECHANISM FRAME Figures 14, 15

This is fixed to the outer pair of 7½" Strips 9 in the upper part of the front body section using 3" Screwed Rods with three Couplings on each as spacers. The frame consists above and below

FIG. 3: Main view of the front of the Clock, showing the Gothic styling of the frame.



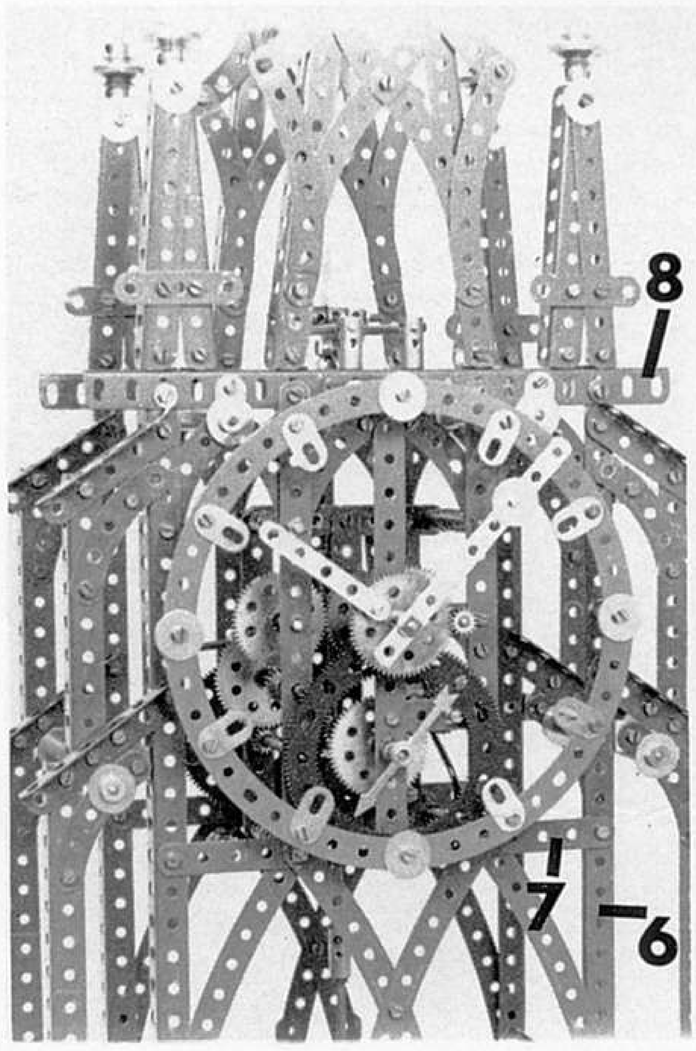


FIG. 2: The Clock dials are shown to advantage in this close-up shot.

of doubled 3½" Strips 15, and attached to these are three sets of vertical 5½" Strips 16, also doubled. Note the uneven spacing. Pivot Bolts (Elektrikit No. 545) are lock-nutted at the places shown, 'x'. A 2" Strip 17 and a 1" Corner Bracket 18 are fixed to the forward 7½" Strips 9.

CONTACT SPRINGS Figure 16

A 7/32" Cheesehead Bolt 19 has its head filed to a wedge as shown in Diagram C. Choose a Bolt with a shallow slot which should be effaced and a new shallow slot filed near the summit.

With this Bolt and Nut connect two 2" Wiper Arms 20, by their end holes. Straighten the bent end of one arm 20 and mount this part between a Fishplate and the long lug of a 1" x ½" Angle Bracket 21. Reshape the other Wiper Arm and bolt the Angle Bracket 21, lug upward and behind the horizontal 7½" Strip 7 of the rear body. The free end of this upper contact spring lightly presses against a ¾" Bolt 22 mounted in a Threaded Boss bolted to the rear body and locked with a Terminal Nut.

A further 2" Wiper Arm 23 reshaped as shown is bolted by its end hole to a Threaded Boss 24 which is held on a 1½" Insulating Strip fixed to the 7½" Strip 7. The upper and lower contact springs are adjusted until their contacts are separated by a 1/32" gap, the upper being vertically above the lower. Bolt two (doubled) 3½" Strips 25 to the vertical 7½" Strips 9 using ½" Bolts, spacing them behind the Strips by two Washers and a Collar on each Bolt. Fix a Pivot Bolt in the 3½" Strips 25 as shown at x.

CONNECTING FRONT AND REAR BODY SECTIONS

Below, each section is bolted to a 12½" Angle Girder. Above, the sections are connected by 5" Screwed Rods and 4½" Plastic Rods at seven locations as follows: at the peak of the lowest pair of 2½" Curved Strips; through the hole next to the top of the 2½" Curved Strips connected to the 7½" Angle Girders; through the peak of the pairs of 2½" Curved Strips at the top of the main body just under the 9½" Angle Girders 8; and through the point in the main spire where the central holes of the 3" Curved Strips overlap.

On all of these Screwed Rods, 4½" Plastic Rods are used as spacers, and ¾" Washers are placed on all surfaces. Terminal Nuts are used at the front end of the Screwed Rods, being more decorative than ordinary nuts.

PENDULUM SUSPENSION Figures 5, 17

A pair of Threaded Couplings 26 bolted to the flanges of the 9½" Angle Girders 8 support 5" Rods in their upper transverse holes, these Rods also passing through transverse holes of Short Couplings. Through the other transverse holes of these Short Couplings a 2" Screwed Rod 27 is passed; between the Couplings this rod carries a 2" Flexible Strip spaced from each Coupling by a Collar, a Washer, and a Thin Washer, and it is held in place by Hexagonal Nuts. (Square Nuts are obstructed by the Grub Screws in the Couplings.)

PENDULUM Figures 11, 19

From the top down the Pendulum consists of the following: An End Bearing 28, a 3½" Rod carrying a Short Coupling, and connected to a 6½" Rod by a regular Coupling; the 6½" Rod passes through the centre transverse hole of a Threaded Coupling 29 and is connected by a further Threaded Coupling to an 8" Screwed Rod which carries the bob and which is locknutted at its lower end in the boss of a Double Arm Crank 30.

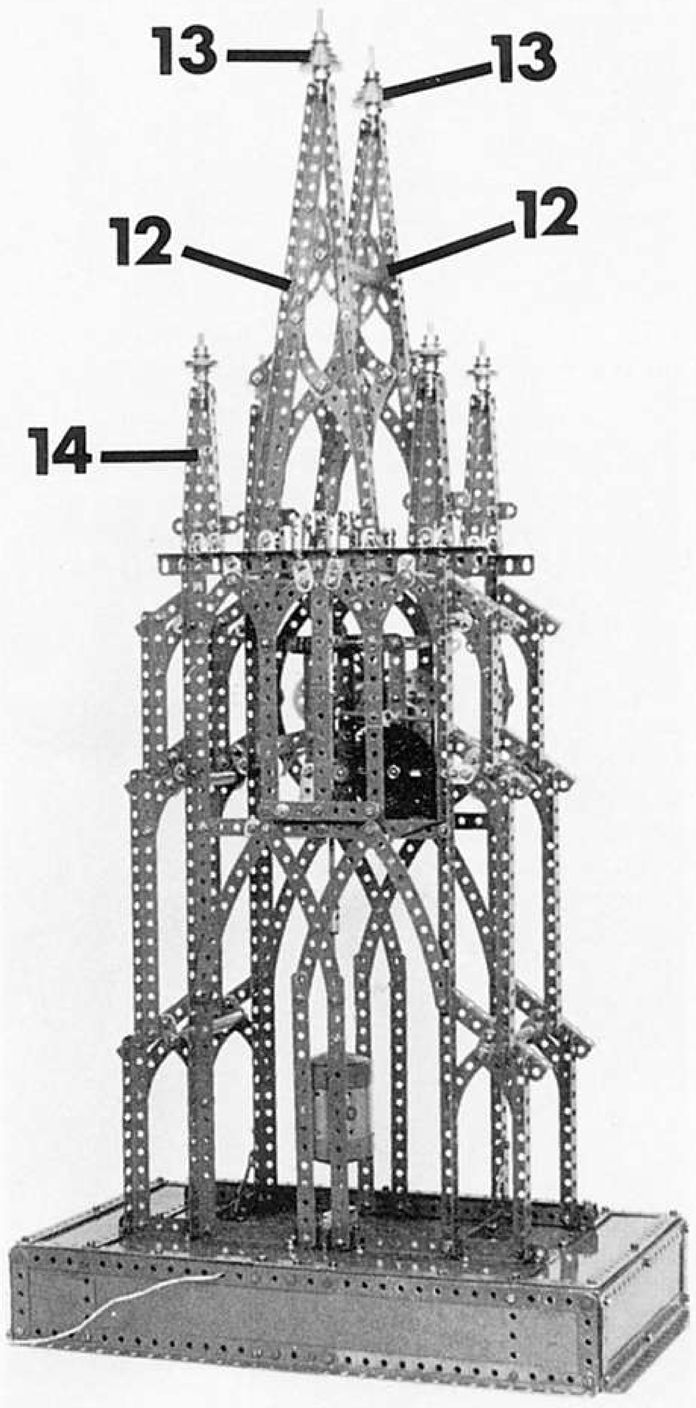


FIG. 4: The Hipp Clock as seen from the rear.

THE BOB

A Cylinder is constructed from a 5½" x 2½" Plastic Plate lengthened 2" by being bolted to a 2½" x 1½" Plastic Plate. Adjust this as a snug fit in a pair of Boiler Ends. Mount all this on the 8" Screwed Rod with a Conical Disc above and below, and also a nut and a Threaded Boss below, and a Threaded Boss above.

Fill the bob with Meccano Bolts till it weighs about one pound. Shot or other weighty matter can be used instead of bolts. Screw the Threaded Bosses together to close the bob to prevent spillage. A Centre Fork held in a Rod and Strip Connector is fixed by a Shoulder Bolt through the connector into the end threaded hole of the Threaded Coupling 29.

PENDULUM MOVEMENT

Complete the wiring as shown in the wiring diagram. The pendulum is suspended by bolting the End Bearing 28 to the 2" Flexible Strip (two holes of which project up unused above the 2" Screwed Rod 27). A ½" x ½" Angle Bracket is bolted to the end hole of the Double Arm Crank 30 and a Core for Rectangular Coil

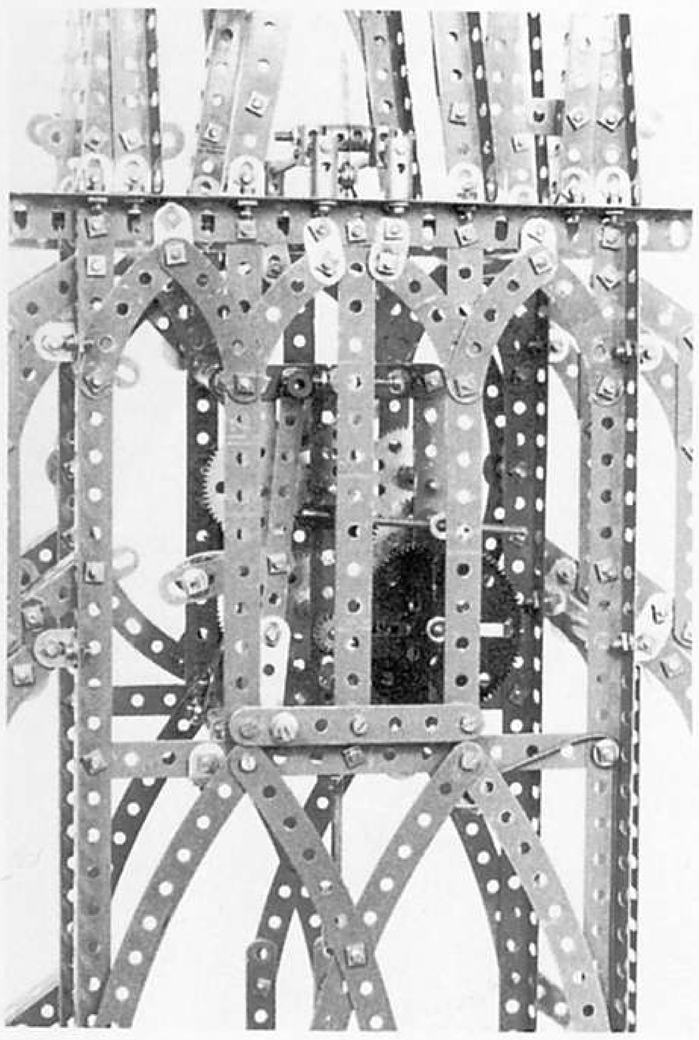


FIG. 5: The rear of the gearbox framework, housed in the upper part of the Clock body.

is bolted by its end threaded hole to the lug of the Angle Bracket thus bringing the Core close to the undersurface of the Crank 30. Adjust the length of the pendulum so this Core clears the Cores of the electromagnets by 1/16".

Adjust the Threaded Coupling 29 till the Centre Fork clears the Contact Strips 20 by about 1/16" but catches on the wedged bolthead 19 as described in the opening paragraph. Adjust the Short Couplings of the pendulum suspension so that the Centre Fork is centrally placed over the Contact Strips and so that the Core at the lower end sweeps over the electromagnet without hitting the rear part of the body. Connect the coils and contacts to a source of about 9 volts. Set the pendulum in motion. It should keep swinging indefinitely.

GRAVITY ARM Figures 5, 11 18

This is L-shaped, and made from a 5½" Narrow Strip 31 secured at 90° at its lower end to a 2½" Narrow Strip to which a ½" Pulley with Boss 32, is bolted. A Crank secures the 5½" Narrow Strip to a 2" Pivot Rod 33 journalled in the Pivot Bolt x in the 3½" Strips 25 of the rear frame and in the corresponding Pivot Bolt x on the mechanism frame. Also fixed to the gravity arm are an Insulating Spacer at the top hole and a 2" Slotted Strip at the sixth hole from the top, and set at a slight downward angle.

A 1⅛" Bolt with a Pawl without Boss 34 held by locknuts at its head end is lock-nutted at about the centre of the slot in the 2" Slotted Strip. A further 2" Pivot Rod 35 carrying a Ratchet Wheel to its rear and a ¾" Pinion at its front end rotates in the other set of Pivot Bolts x, one of which is held in the 2" Strip 17 of the mechanism frame. The Ratchet Wheel is mounted boss to the front, the Pinion, boss to the rear. The gravity arm rests against a stop made from an Insulating Spacer lock-nutted on a 3" Screwed Rod threaded through the end transverse threaded hole of a Threaded Coupling 36 bolted to the rear of the mechanism frame.

This stop is adjusted by rotating it until the Insulating Spacer allows the correct range of movement of the gravity arm. The gravity arm is actuated by a 1⅛" Bolt 37 fixed by locknuts in the transverse unthreaded hole of the Short Coupling near the top of the pendulum. With the pendulum in its neutral position, this Bolt 37 must contact the Insulating Spacer of the gravity arm which should be separated from the stop by about 1/16". Now adjust the 2" Slotted Strip and the Bolt lock-nutted in its slot so that at each swing of the pendulum the Pawl 34 sweeps over one tooth of the Ratchet Wheel.

When the pendulum swings clear of the gravity arm, the latter will return by the weight of the ½" Pulley 32 and cause the Ratchet Wheel to advance one tooth. To prevent free-wheeling of the ratchet, a 2" Wiper Arm presses against its axle35, the wiper arm being fixed to a Fishplate bolted to one of the spacer couplings of the mechanism frame.

Adjust the stop if necessary to provide sufficient movement for the ratchet—and to prevent excessive motion with resulting engagement of two teeth at one swing.

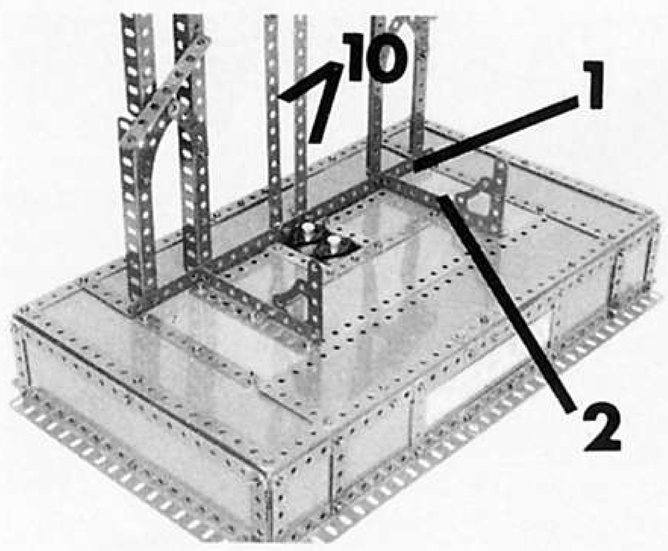


FIG. 6: The base of the Clock prior to fitting the front section of the body.

GEAR TRAIN Figures 12, 13, 14, 15

The ¾" Pinion on Rod 35 engages a 60-T Gear Wheel on a 4" Rod journalled in the midline of the clock, and ½" lower than the ratchet rod 35. To allow for free mesh, the 2" Strip 17 must be adjusted in its bolts to lie as high as possible. This 4" Rod carries from front to rear a Pointer (Obsolete Part No. 156), a Collar and Washer and behind the mechanism a ½" Pinion 38 which engages with a 2½" Gear Wheel on a 3½" Rod in the 5 o'clock region.

This rod also carries a 7/16" Pinion (and Washer) which meshes with a 60-T Gear Wheel on a 3" Rod vertically above it, a rod which also carries near its front (but within the frame) a ½" Pinion. This Pinion engages a 57-T Gear Wheel on a further 3" Rod vertically above it.

The minute hand is a 4½" Narrow Strip fixed by a nut to the threaded section of a Rod Socket

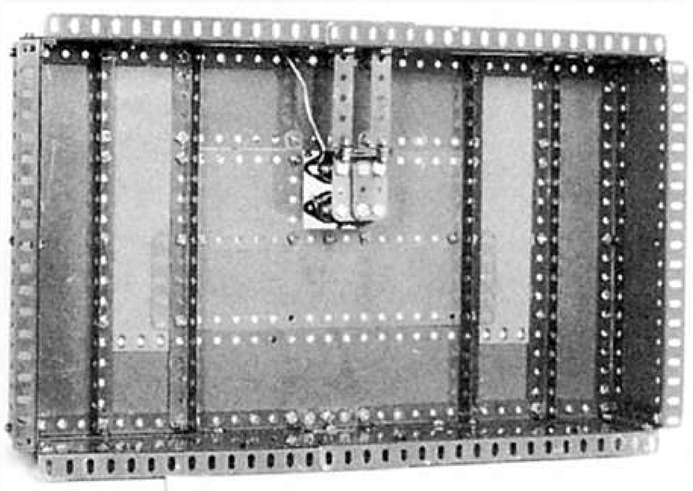


FIG. 7: Underside view of the base, note placement of Elektrikit coils.

mounted on a 4" Rod 40 carrying, from front to rear, a Washer, a 60-T Gear Wheel loose on the shaft, a Collar, aWasher. the centre hole of the central 7½" Strip 9, a Washer, a Collar 39, a Compression Spring, a 57-T Gear Wheel loose on the shaft but pressed by the spring, against a 1" Pulley with Rubber Ring fixed to the shaft, and finally a ½" Pinion in front of the rear strip 16 of the frame. The loose 60-T Gear Wheel has the hour hand fixed to it, a 2½" Narrow Strip spaced with three washers.

The loose 57-T Gear Wheel meshes with its neighbour on the 3 o'clock side. The ½" Pinion meshes with a 57-T Gear Wheel on a 3½" Rod journalled in the 1" Corner Bracket 18 and the rear frame and carrying a 7/16" pinion which drives the loose 60T Gear Wheel.

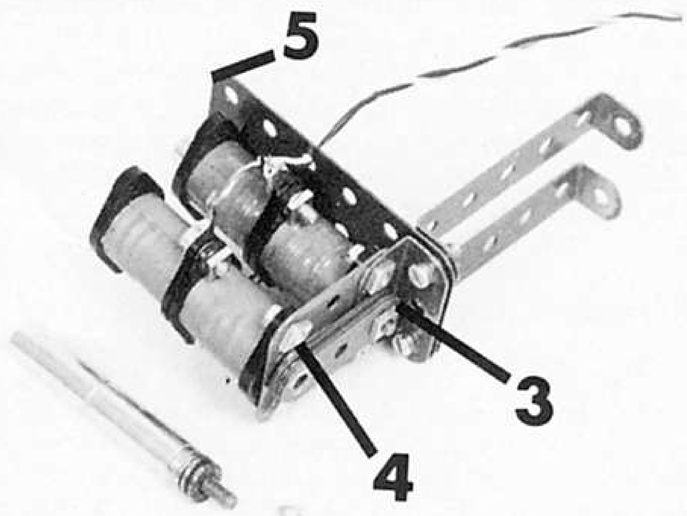


FIG. 8: The built-up electromagnets, with one core removed to show construction.

THE DIALS Figure 2

The seconds dial is a Gear Ring mounted concentrically with the second hand, spaced by a collar above and below. The main dial is a 7½" Circular Strip mounted at 3, 6, 9, and 12 o'clock on 1⅛" Bolts attached to vertical and horizontal members of the frame, spaced by two Collars on each Bolt. The Bolt at 6 o'clock also secures the seconds dial. These four Bolts hold ¾" Washers to represent numerals, the other numerals being Fishplates arranged as shown.

Note that the 1⅛" Bolts pass through the midpoint of the long slotted holes of the Circular Strip. A Circular Strip of a Contrasting colour should be used, and the Narrow Strips making up the hands should also be of a different finish from the body of the clock.

OPERATION

Follow the simple wiring diagram for electrical connections. The ideal power supply is a set of nickel-cadmium batteries connected to a trickle charger. This will obviate stoppage of the clock in the event of a power cut. About 9 volts is ideal. Higher voltages could cause the core at the bottom of the pendulum to touch the core of the electromagnets.

Adjust the pendulum suspension so that the pendulum swings clear of all obstacles, and so that the core at its lower end lines up with the

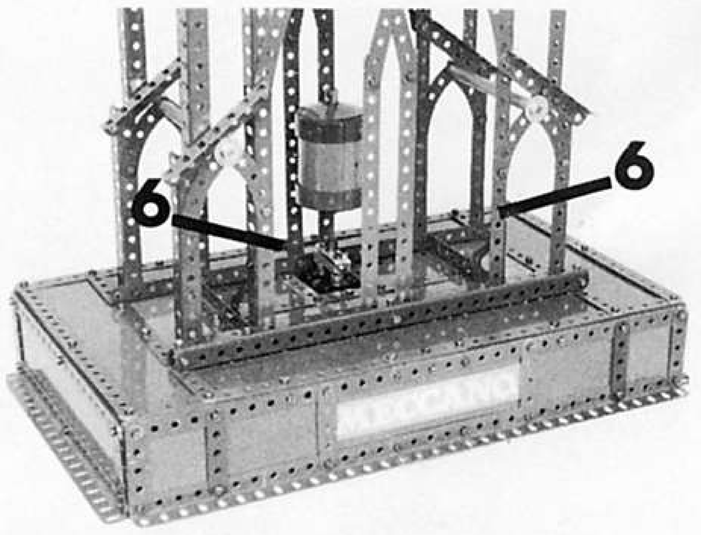


FIG. 10: Close-up view of the completed base.

cores of the electromagnets with a gap of about 1/16". The trigger must also be positioned over the upper contact spring. The gap between the two contacts must be adjusted to close in the

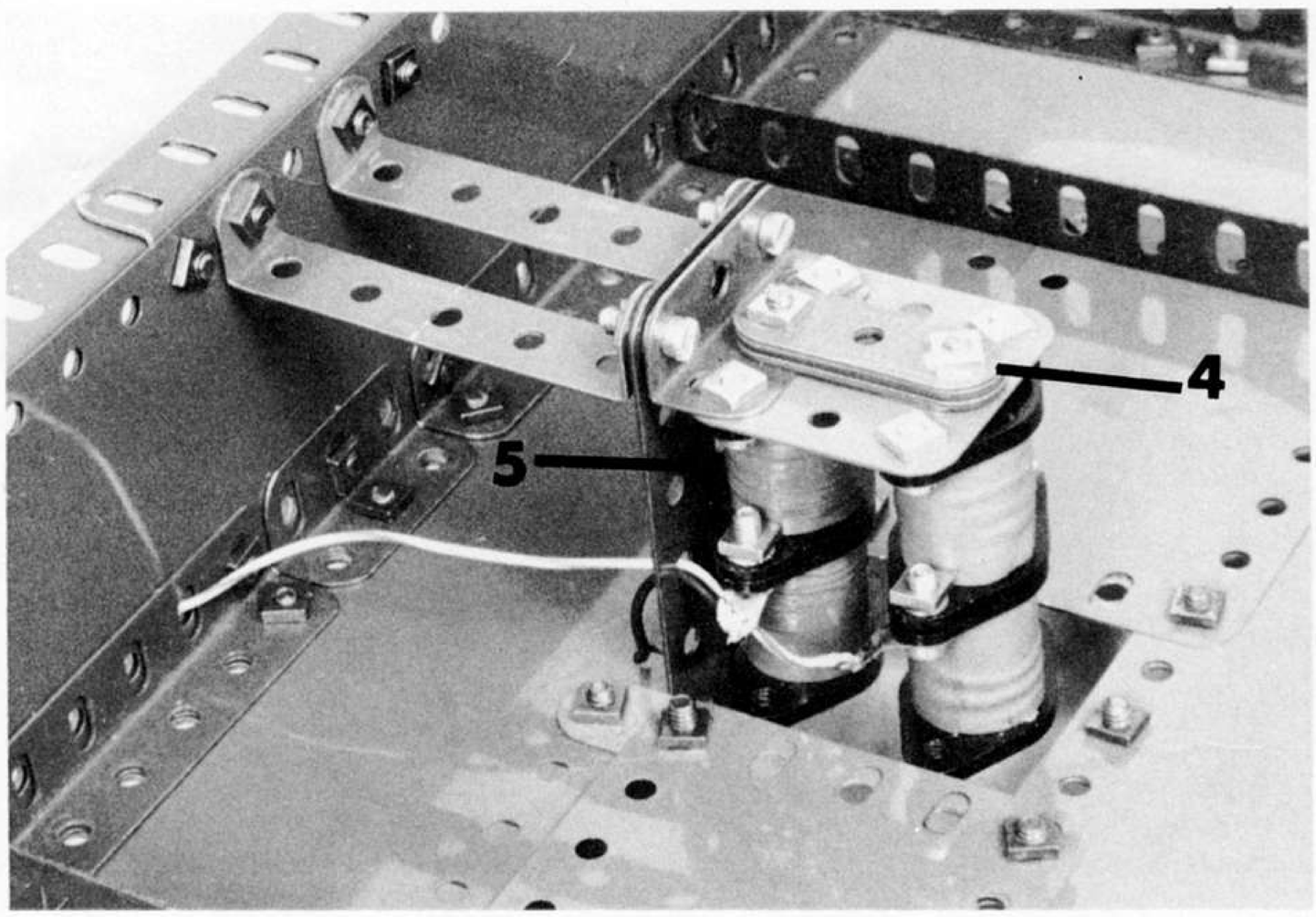
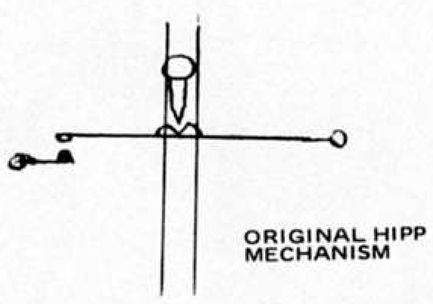


FIG. 9: The electromagnets in position inside the Clock base.

manner described in the introductory paragraph.

When the pendulum is swinging satisfactorily, make sure that the Pawl 34 on the gravity arm rides over a full tooth of the Ratchet. Time-keeping is adjusted by altering the level of the pendulum bob and this is easily done with the supporting Threaded Boss. This adjustment is made easier because of the provision of the seconds hand, the sweep of which can be checked against that of a commercial mains-operated electric clock.



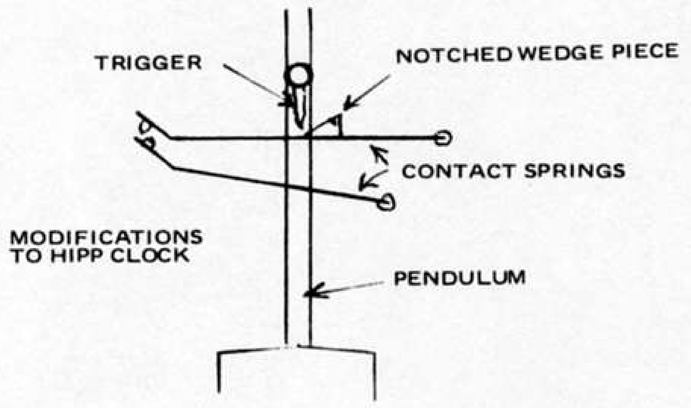


DIAGRAM A.
Basic principles

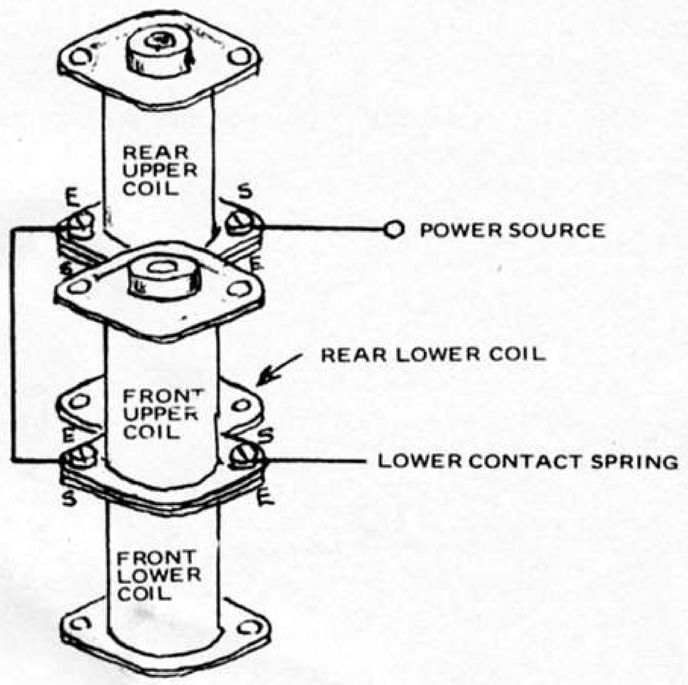
Left:
DIAGRAM B
Electrical Connections of Coils

The coils are arranged in pairs, one pair directly in front of the other. The upper coil in each pair is connected to the lower coil by bolts through the electric eyelets, connecting E of the Upper coil to S of the lower and S of the upper coil to E of the lower.

The front and rear pairs of coils are arranged with like eyelets on the same sides as shown, in identical configuration.

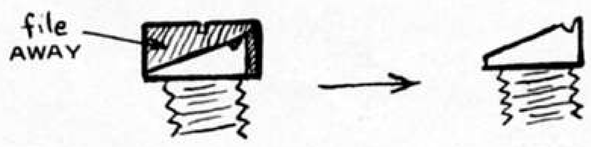
A connection is now made between the E and S eyelets of the rear coils and the E and S of the front coils.

The remaining eyelets are connected as shown. The upper contact spring is fixed to earth and to the other terminal of the power source.



Right:
DIAGRAM C
Preparing the Bolt.

The head of the bolt is shaped to a wedge removing the section shown shaded in the diagram. The vertical contour near the summit of the wedge should be flattened, also by filing, and a shallow V-section slot should be formed very close to and parallel with the summit as shown.



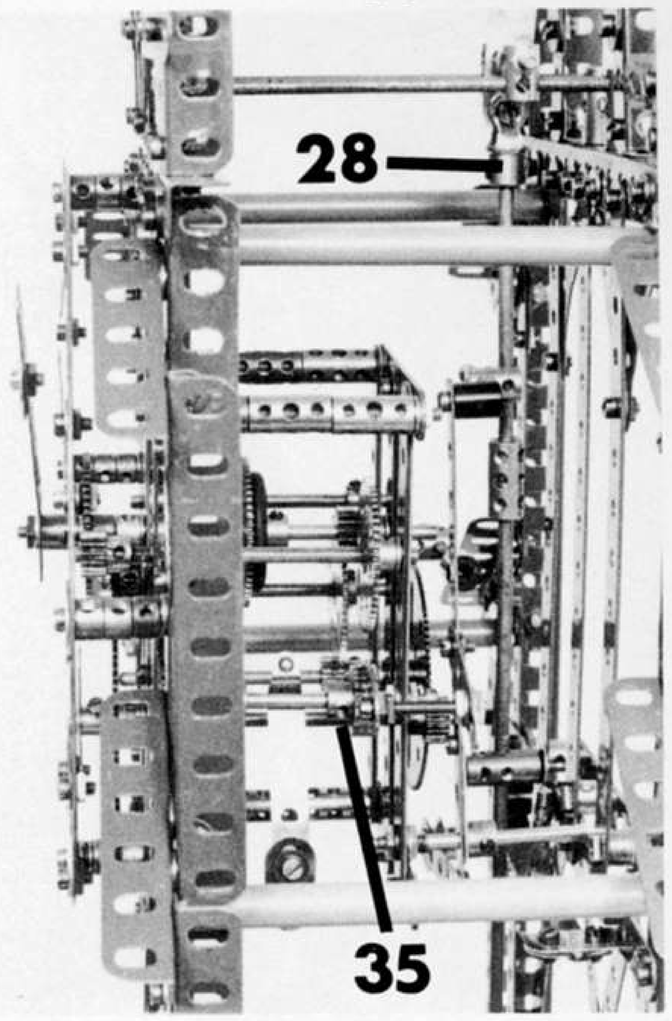


FIG. 11: Clock mechanism as viewed from the '3 o'Clock' position.

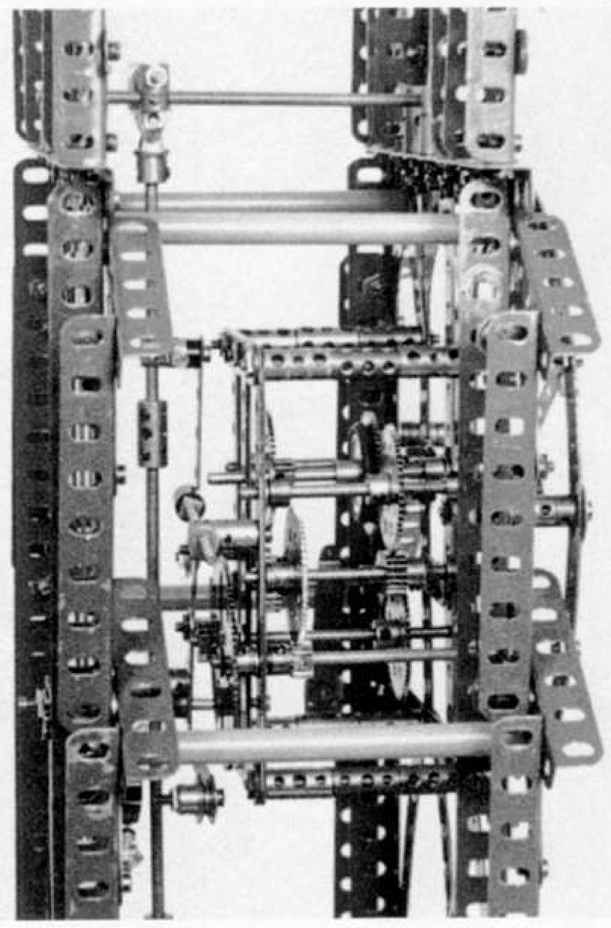


FIG. 12: Clock mechanism as viewed from the '9 o'Clock' position.

WIRING DIAGRAM

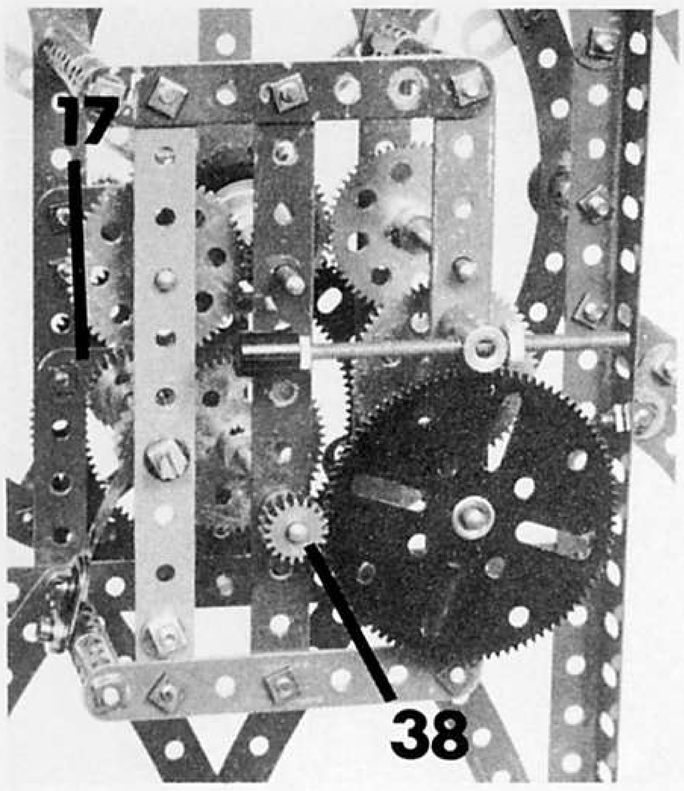


FIG. 13: The mechanism after removal of the rear part of the body.

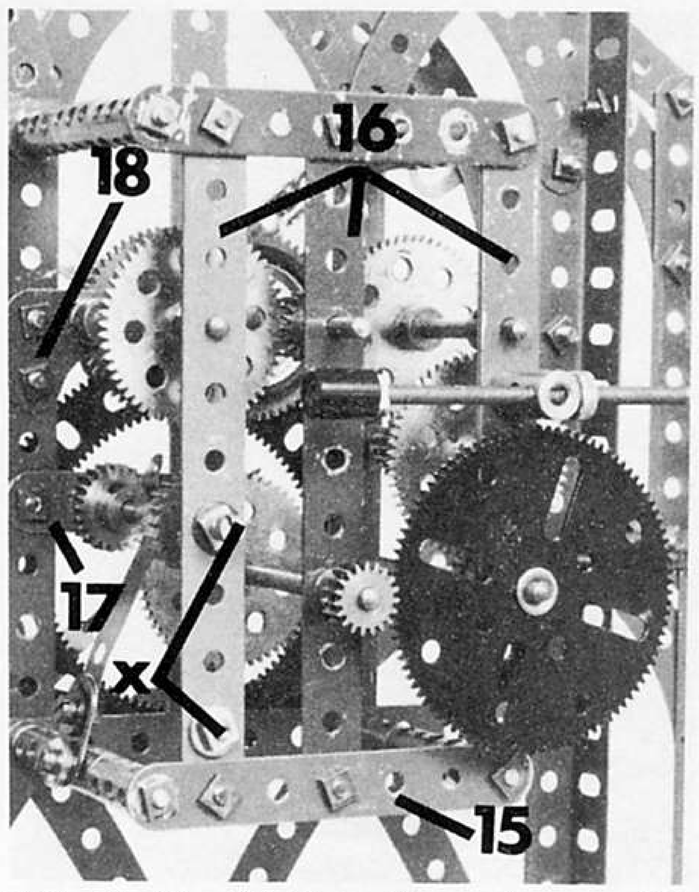


FIG. 14: The 2" Strip 17 requires careful adjustment to insure the best operation.

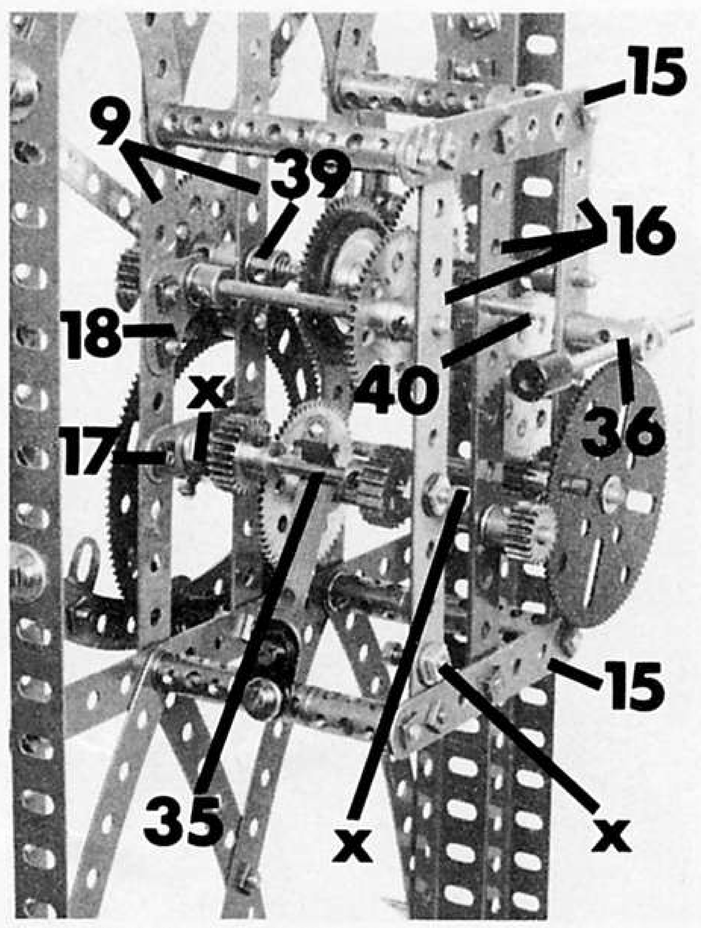


FIG. 15: The gearbox seen from a different rear viewpoint, showing positions of Axle Rods.

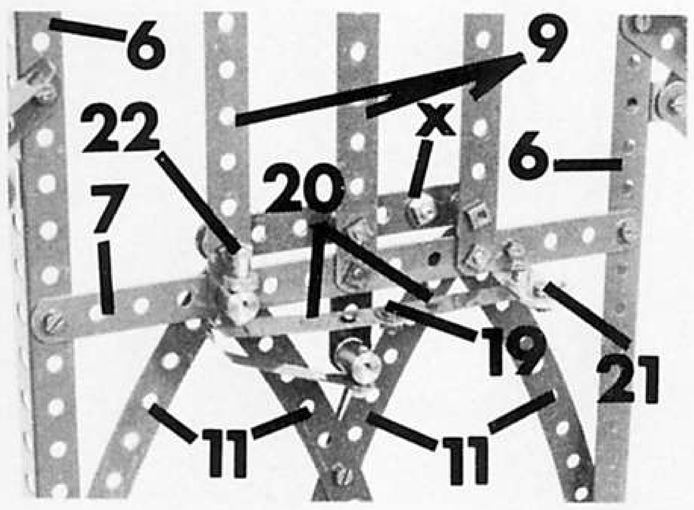


FIG. 16: Contact Strips, with the notched wedge piece 19.

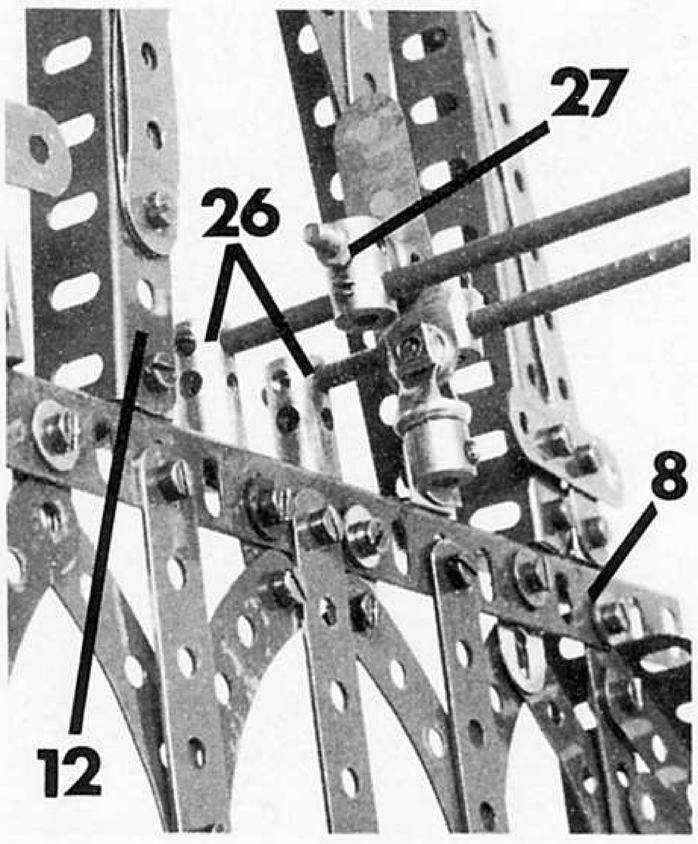


FIG. 17: The pendulum suspension arrangement, after removal of pendulum.

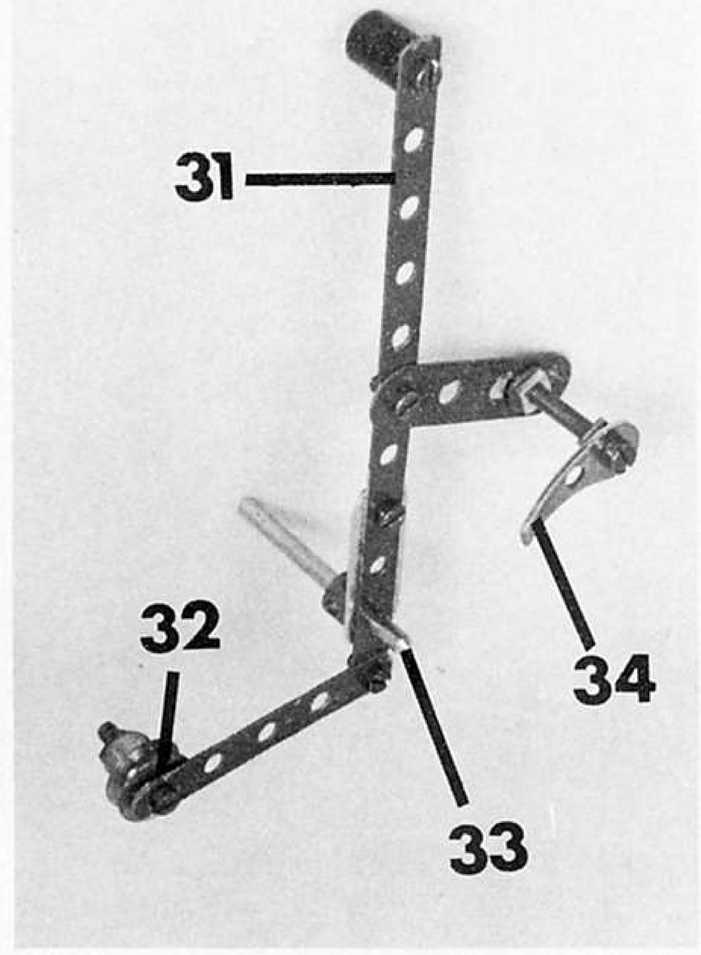


FIG. 18: Removed from the mechanism, the gravity arm.

SKELETON HIPP CLOCK PARTS REQUIRED

1	of	No.	1	340	of	No.	37C
12	of	No.	1A	130	of	No.	38
13	of	No.	1B	24	of	No.	38D
6	of	No.	2	2	of	No.	48A
2	of	No.	2A	1	of	No.	55A
6	of	No.	3	34	of	No.	59
2	of	No.	4	1	of	No.	62
16	of	No.	5	1	of	No.	62B
5	of	No.	6	13	of	No.	63
7	of	No.	6A	7	of	No.	63C
4	of	No.	7A	3	of	No.	63D
7	of	No.	8	3	of	No.	64
14	of	No.	8A	1	of	No.	65
8	of	No.	8B	1	of	No.	73
4	of	No.	9				
14	of	No.	9A	1	of	No.	74
4	of	No.	9B	1	of	No.	79
4	of	No.	9C	5	of	No.	80
8	of	No.	9D	4	of	No.	80C
3	of	No.	9F	3	of	No.	81
27	of	No.	10	8	of	No.	89
21	of	No.	12	4	of	No.	89A
1	of	No.	12B	8	of	No.	89B
1	of	No.	14	36	of	No.	90
2	of	No.	15	2	of	No.	108
2	of	No.	15B	3	of	No.	111
3	of	No.	16	9	of	No.	111A
				11	of	No.	111C
2	of	No.	16A	9	of	No.	111D
2	of	No.	16B	1	of	No.	120B
4	of	No.	17	2	of	No.	123
1	of	No.	22				
4	of	No.	22A	1	of	No.	145
11	of	No.	23A	1	of	No.	147C
1	of	No.	25	1	of	No.	148
3	of	No.	26	1	of	No.	155
2	of	No.	26C	1	of	No.	162A
3	of	No.	27A	1	of	No.	166
1	of	No.	27C	1	of	No.	179
3	of	No.	27D	1	of	No.	180
300	of	No.	37B	2	of	No.	187A
4	of	No.	190				
2	of	No.	190A				
1	of	No.	194				
1	of	No.	194E				
2	of	No.	195				
5	of	No.	196				
2	of	No.	197				
1	of	No.	212				
2	of	No.	235				
1	of	No.	235D				
1	of	No.	235F				

Replica part:
1 of No. 156

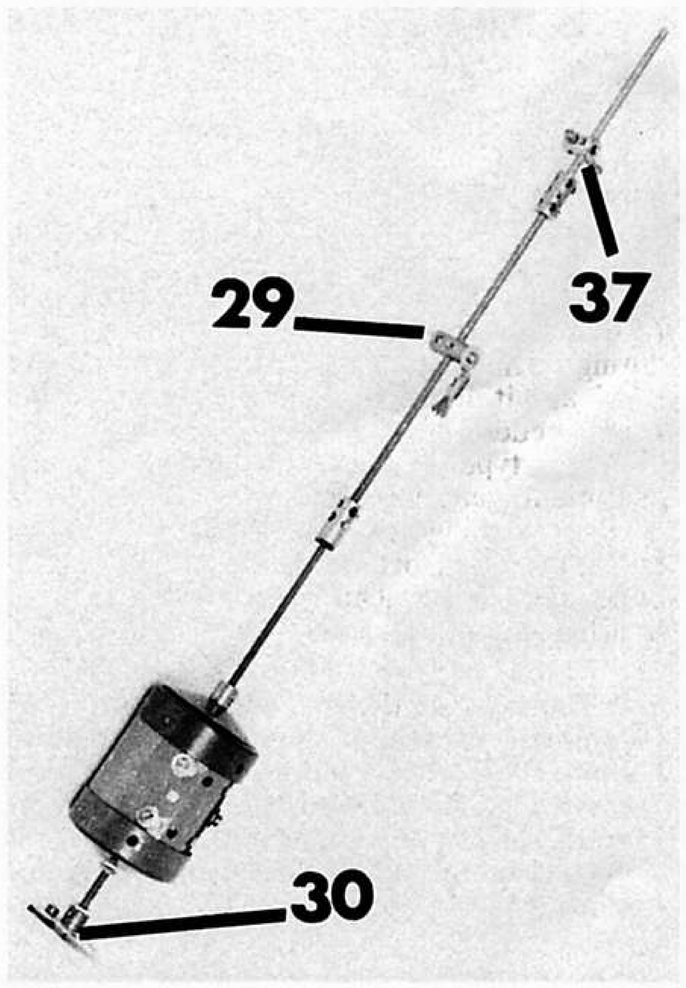
Elektrikit parts

1	of	No.	503
4	of	No.	522
1	of	No.	526
4	of	No.	528
1	of	No.	530
4	of	No.	533
9	of	No.	542
4	of	No.	545
2	of	No.	549
2	of	No.	564
2	of	No.	561

Plastic Meccano
7 4½" Rods

A 1" Rod filed to a screwdriver point is just as good as a Centre Fork

FIG. 19: The Pendulum is shown here complete, except for the End Bearing 28.



Midlands OutLOOk

by ROGER WALLIS

EDITOR OF THE MIDLANDS MECCANO GUILD GAZETTE

THIS month, I will look at some of my own methods of building and collecting information for my Meccano models.

There have been many devices designed for curving flexible plates, including the one designed by M. Bachelard, described in the 'MM' for March 1969. However, I have found that a small piece of broomhandle, or 1" dia. dowelling, and an off-cut of foam-backed carpet, just as effective. The technique is to roll the dowelling over the plate laid on the carpet, pressing hard, ensuring that the dowelling goes to the ends of the plate.

This is a fairly lengthy process, but does an excellent job of curving the plate.

For an easier, but not quite so neat, method, I roll the plate around the dowelling, using the thumb and fingers, again going right to the end of the plate. If the curve is made slightly sharper than the one required, then re-curved to the actual radius needed, you will end up with an acceptable curved plate.

Thus, I have collected a fair number of 5½" x 4½" curved plates, and it is a fairly easy matter to alter their radii, although this is rarely needed—in my modelling, anyway! The point is, one does not alter parts 199 or 200, so why do we attempt to curve and then straighten the other flexible plates?

Again, I try to avoid curving the larger plates (195-6-7), because they are of thicker gauge than the smaller sizes, so they do not bend so easily. Instead, I prefer to use a number of smaller plates.

As for strips, these are best left in their natural state, but with the advent of the strip bending machines described in the January 1978 'MM', curving strips has been decidedly easier. I have used the 'economy' version, although it will be found useful to strengthen the bending rod bearings with extra strips.

How about dismantling a model? Yes, some tips on this!

It can be a boring task, so I tend to break the model into sections (to relieve the boredom!) dismantling each section in turn, filing the parts away after each section has been taken apart. But this is the point I wish to make, *YOU CAN LEARN FROM THIS TASK.*

When I built my block-setter, I had a lot of trouble getting nuts into confined spaces, yet on dismantling, there were no problems. Why? Because it came to pieces in a different order to its construction. If you then think about the reason for a few minutes while you are busily dismantling, one realises the mistakes made in the construction phase. Although that particular model will probably not be rebuilt, the *TECHNIQUE,* because you thought about it during dismantling, will be implanted in your mind, and it then should be able to be recalled when needed.

In this type of article of course, it is only possible to generalise, but as an example, a lot of my modelling activities are concerned with the reproduction of buses and coaches. I usually build the chassis first and then make the body to fit. This often results in the juggling of the chassis, or the bodywork to make them both 'meet' successfully. However, when I built my 'Mercedes' coach, it was built the other way round, that is, the body and then the chassis. It was easy! As the chassis was built up, being a much smaller unit, it could be dropped into place and checked for alignment as construction proceeded. Thus a lot of problems were avoided.

In my job as a computer engineer, which means, incidentally, having the responsibility of keeping around £5 million worth of computing equipment serviceable, I rarely remember the intricate details of how it works. It is virtually impossible anyway, due to the constant improvements in technology. What is important however, is that I remember where to access that information when required.

This is my approach to Meccano modelling. It is all very well designing on paper how your super-special, multi-motored masterpiece will perform, but will it actually work like that? I invariably find that the answer is no.

When fault finding on a computer for example, it is easy to be led up the garden path by examining logic diagrams and symptoms, and coming to the conclusion that 'x' is wrong. On replacing 'x', the fault is still there. Why? Because I had made an error in the deductions.

Instead, a more logical approach is to search out all the facts and start fault finding at square one.

Now, apply this technique to our modelling activities and it becomes a more interesting and pleasant task. First, find out if the mechanism required has been published in one of the Meccano journals. Quite often you find that it has, or something of a similar nature has been featured. The automatic gearbox used in my Leyland 'National', for example, came from a variable speed gearbox that was published in the 'MMQ'.

Having sought out the facts, or similarities, I then sit at my workbench, often wondering why Meccano have not produced a twelve hole strip (or whatever) as it will be the complete answer to my problem, and just experiment with my stock of parts, trying to produce the twelve hole strip.

It may mean that after a couple of hours I still have not found the answer, but at least I know what *DOES NOT* give me the required result.

This is the same technique as my computer repair comparison. I have been involved in faults that have taken several days (and nights!) to diagnose, but all along the way we were getting *NEGATIVE* information in as much as we knew what was *NOT* causing the trouble!

Besides, I think that the practical approach is much more fun and interesting, as quite often, I come up with an answer that then only needs a problem!

I have already mentioned the importance of access to information, so how can we achieve this?

I am fortunate to have at my disposal every 'MM' from January 1946 onwards, and there is a wealth of information in many of them. Although they are not bound, they are stored in separate years.

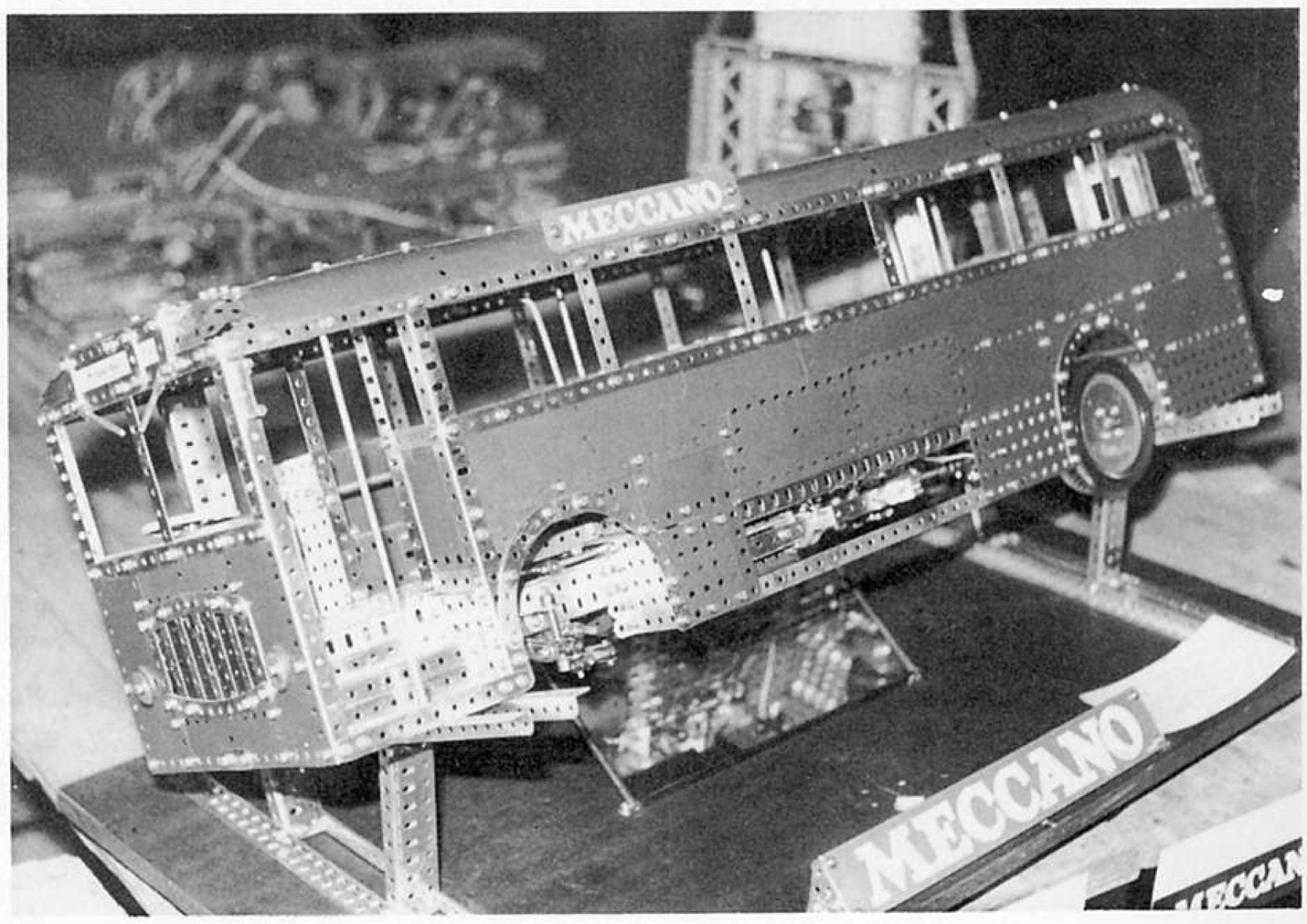
During the cold winter evenings, I compiled a complete catalogue of information held, that is of interest to myself. This choice is listed in years and contains such information as the year and month of publication, a description of the model or mechanism, and whether it is just a single picture or carries full instructions.

Consequently, when information is required, it only takes a few minutes to index and collate the information wanted. Perhaps, by combining two or three items, one can then form a basis for the mechanism or model that you wish to build.

MONTH	DESCRIPTION
JAN	Screw Operated Steering Mechanism
FEB	Two Speed and Reverse Gearbox
MAY	Pre-selector Gearbox Control Road Vehicles (photos) Road Sweeper Lorry (Outfit 8)
JULY	Single Deck Trolleybus (photo)
AUG	Rev. Counter
OCT	Tipping Power Barrow
NOV	Motor Coach (photo)
DEC	Walking Dragline

A typical leaf from Roger's filing system.

A different way to show a Meccano display model. This is the Author's Midland Red S15 Bus.



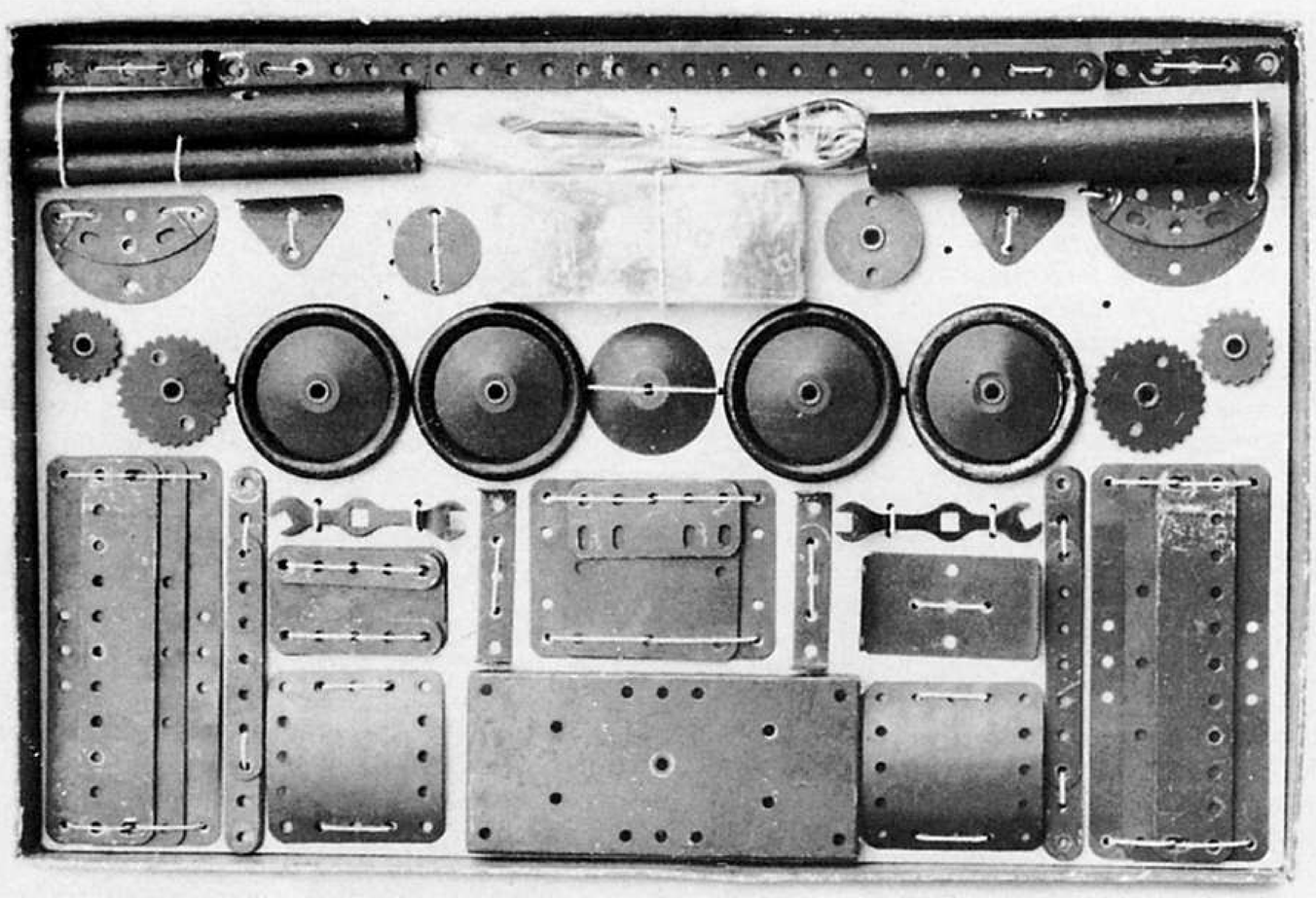
JOSEPH MANDUCA

looks at the . . . MECCANO MECHANISED ARMY OUTFIT, 1939

OLD Meccano products, especially outfits long since obsolete, are priceless treasures for the serious collector. Those who are not lucky enough to possess one of these 'unreachables' will always be interested to read about them and their component parts, particularly if those parts are peculiar to that one set. It is also interesting to discover what models could be constructed from the set proper and how these parts could be utilised to enhance the appearance of models built from standard components.

The Mechanised Army Outfit was introduced on the market just before the Second World War started. War threw the whole world, especially Europe, into a series of conflicts and disasters which affected not only the armed forces, but also, very badly, the whole population of the fighting nations. By that time the horse-drawn vehicles and endless columns of marching men were things of the past. The whole process was very slow and tiresome for the 1939 standard, so the armed forces, especially the army, turned to mechanisation and thus revolutionised the whole process or 'art' of making war. In fact Tanks, Guns, Searchlights and other war machines all found their way to the battlefront by their own power, instead of relying on great human and/or animal, mainly mule, efforts.

Meccano Ltd. in 1939, rightly looked for modernisation and more sales and so they thought of giving a taste of the (then modern) vogue to every youngster wishing to construct a war machine no matter what description; Lorries, Guns etc.



The Mechanised Army Outfit in its original box.

The outfit was produced in very limited quantities due to the increasing pressures of war production on the Binns Road factory. In fact the production of Meccano ceased altogether, and that is why the Mechanised Army Outfit is today so rare—not many were manufactured prior to this.

The box lid gets the message across plainly and simply.

The first announcement of the production of this set appeared on the inside front cover of the August 1939 issue of Meccano Magazine, with an introductory article on page 484 of the same issue. Originally priced at 10/6d, the price rose to 12/6d in January 1940 and to 13/6d in February 1940. This set could be looked upon as the 'father' of the present-day Multikits, but it had the same disadvantage as the latter, that is, in almost every model, one had to bend, (often at right angles), a good number of its plates. Once bent, there was no way of restoring their original perfect state. This drawback prevents me, even today, building some models; I much prefer merely to gaze at the diagram, than to actually construct and be left with a number of irreplaceable mutilated parts.

THE OUTFIT INSPECTED

The box in which the outfit is packed measures 18" x 11¾" x 1⅞". The green coloured lid has a large label with the appropriate name depicting a boy wearing a light blue pullover drawing one's attention to three models. The lid is completed by a red and yellow strip running across the top left hand corner.

The so-called 'Manual of Instructions' is a misnomer, it refers to a cream coloured leaflet folded twice to produce eight pages. Apart from the title page it gives instructions on how

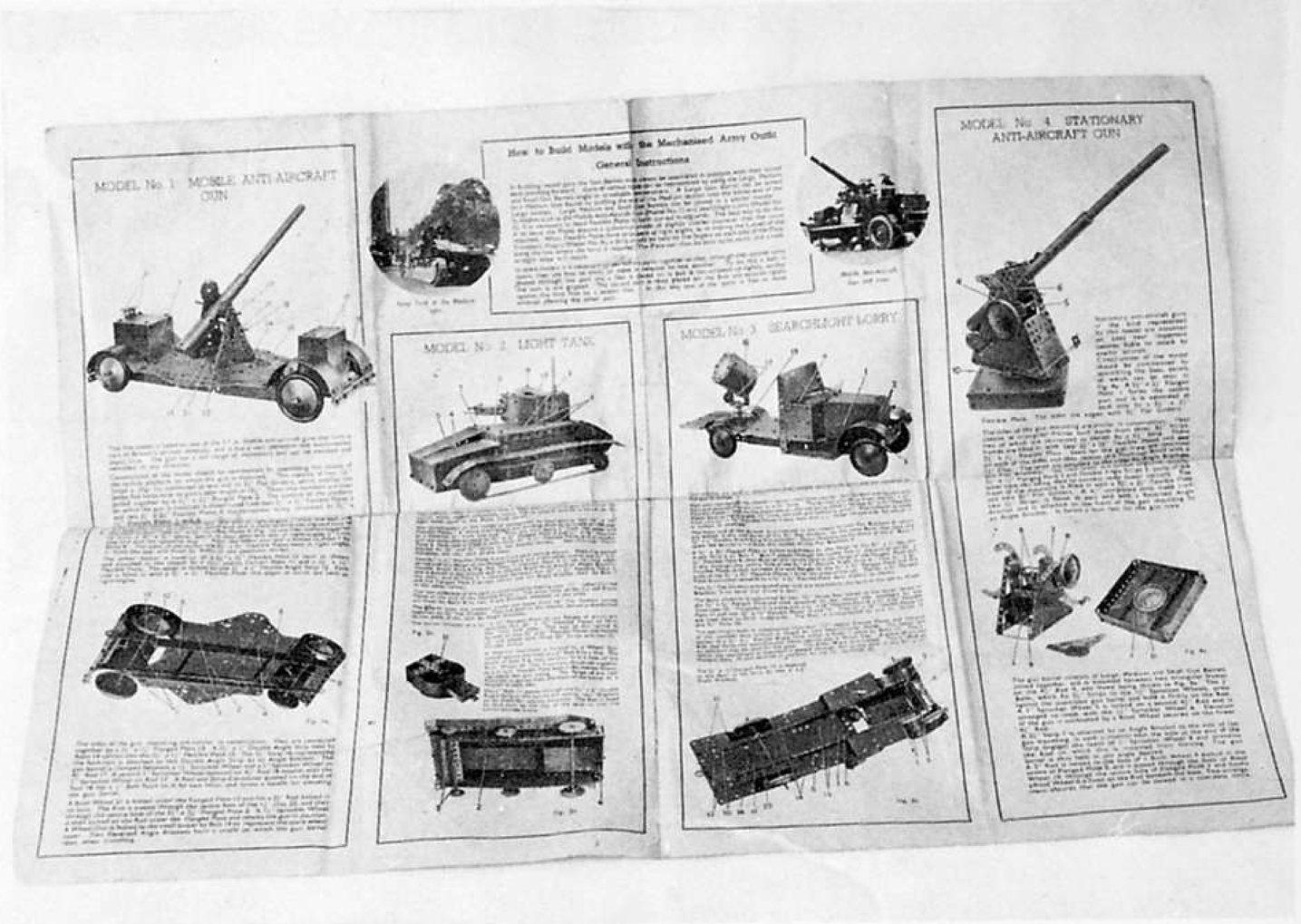
to build six models, the last page showing a layout of the parts and their quantity, together with an advertisement for the 'MM' at a subscription rate of eight shillings for twelve issues! The six models described are;

(1) Mobile Anti-Aircraft Gun.
(2) Light Tank.
(3) Searchlight Lorry.
(4) Stationary Anti-Aircraft Gun.
(5) 18-Pounder Quick-Firing Field Gun and Trailer.
(6) Transport Wagon.

There were two editions of the 'manual', according to their reference numbers 25,000 were prepared in March 1939 and only 4000 in March 1941. In 1940 a leaflet was issued correcting some errors in the original instructions sheet of 1939 in models 1, 5 and 6; at the same time advertising the introduction of two new parts, M221 and M222, (mentioned later). With the exception of these points both editions were similar with a variation in the colour of the ink and paper.

The main parts are enamelled in what was termed Service Green, and the tinplate-type 187 Road Wheels are black. They are tied in a symmetrical manner to a yellow-faced cardboard base.

The contents can be divided into three groups as follows, the numbers in brackets showing the quantity of each parf in the set.



The Instructions Leaflet must have seemed a disappointment to those brought up on the hefty manuals of the early '30's!

GROUP 1:

Identical to standard parts but coloured green where appropriate. These are Nos. 1 (2), 2 (6), 3 (2), 5 (7), 6a (2), 10 (2), 12 (12), 14 (3), 15a (2), 16a (1), 34 (2), 35 (10), 36 (1) 37 (83) 37a (74) 37b (10), 38 (10), 48a (4), 90a (2), 94 (1), 96 (2), 111 (2) 111c (3), 111d (1), 125 (2), 187 (4, in black), 200 (4), 212 (2), 214 (2).

GROUP 2:

Identical to standard parts but in green and with fewer holes. These are Nos. 24 with 2 holes, (1); 51 with five holes in face and two in each flange, (1); 52 with fifteen holes in the face but flanges normal, (1); 95a with two holes, (2); 103 with one slotted hole at each end, (4); 103f with four slotted holes, (2), 126 with no contoured holes, (2), 188 with only 6 holes, (6); 189 with thirteen holes, (6); 190 with eight holes (4); 190a with ten holes, (2); 192 with twelve holes (4); and 217a with three holes, (2).

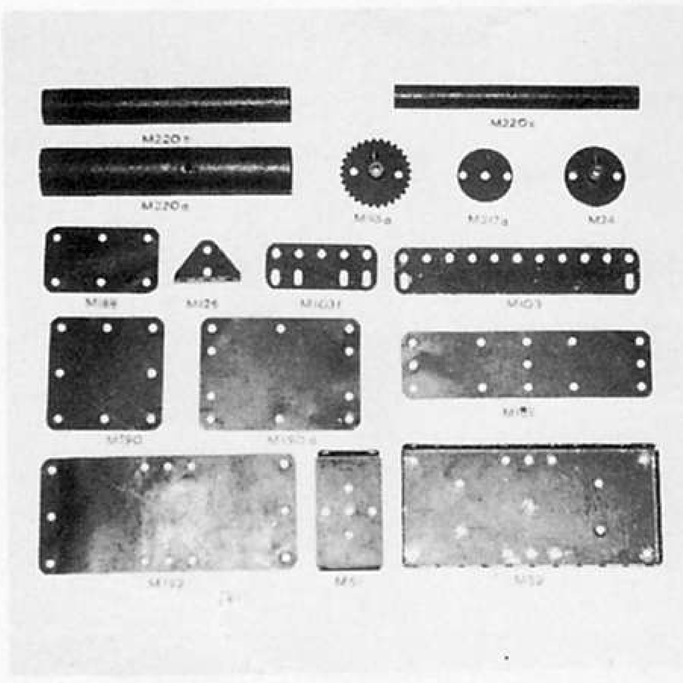
GROUP 3:

Specially designed parts. These were; M220a, Gun Barrel, Large, (1); M220b Gun Barrel, Medium, (1); M220c Gun Barrel, Small, (1), and the later notified parts M221 Angle Plate 2½" x 2" x ½" (3); and M222 Angle Plate 2½" x 1¼" x 1¼" (2).

It is to be noted that later examples of this set had black Spanners and M51 appeared with seven holes, instead of five, in the face. M221 and M222 were included in the outfit contents for 1940.

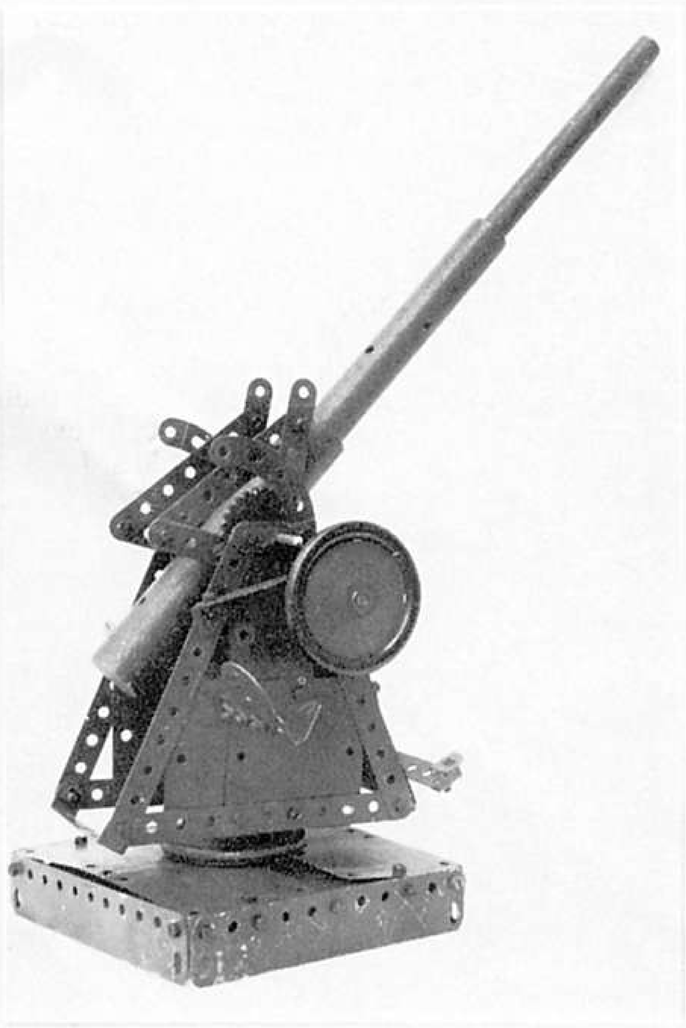
The Gun Barrels are each 5½" long, made of wood but badly finished. Their diameters were 1"; 23/32nds", and ½". Each barrel has at one end a hole drilled 7/8ths" deep, allowing the insertion of the next smaller Barrel to make up a longer length of 2 or 3 sections. Used singly or in combination this allows a total of six different configurations. Each of the two larger barrels has two holes drilled at right angles to its axis and to one another to accept a Rod as a pivot.

Alas for the reasons already mentioned this set had a short life and it is anybody's guess as to how many complete sets exist today; certainly not many!

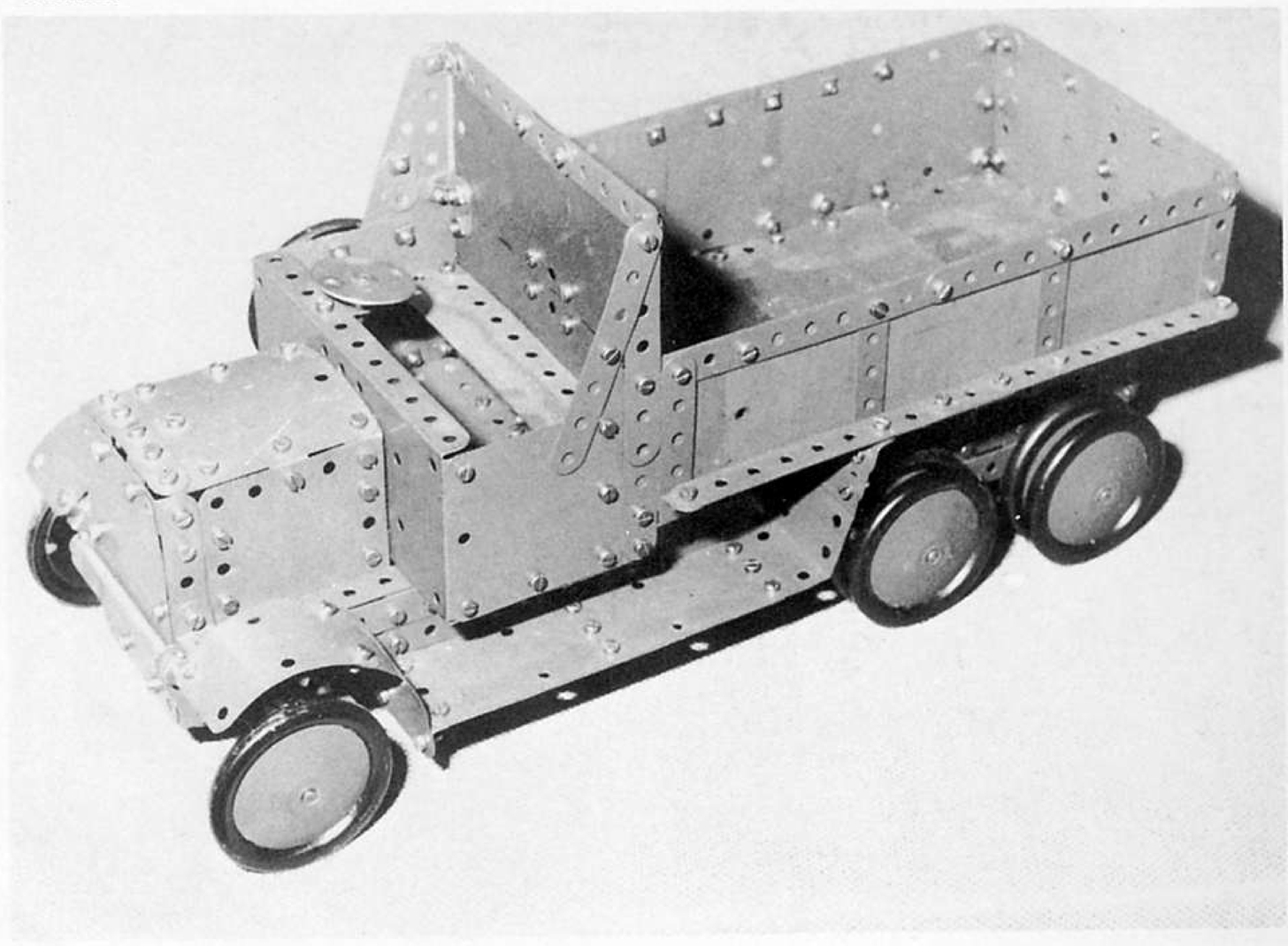


A selection of the unusual parts. M103f differs only by the omission of one slot; hardly worth the expense involved in tooling.

Anti-Aircraft Gun built from the Instructions Leaflet.



Seen at Henley 1979, Alf Reeve's Troop Carrier built from the contents of three Mechanised Army Outfits.



MOBILE CRANE

Designed by Dr. Keith Cameron, from the contents of Meccano Set 5, plus a Power Pack.

THIS model follows the main outline and structure of the Jones KL66. Two power units are incorporated, making possible remote-control lifting of the load and luffing of the jib. Photographs of the prototype were featured in the Meccano Magazine, November 1954.

CHASSIS (figs. 3 & 4).

Two 4½" Angle Girders 1 are connected via their round hole flanges as follows: at their forward ends by a 2½" Flat Girder 2, its row of elongated holes projecting in front of the 4½" Girders 1; at the third hole from the front, by a 1½" x ½" Double Angle Strip 3, and behind this by a 2½" x 1½" Flanged Plate 4, flanges facing upward. A 3" Pulley is attached by 1½" Angle Girders to the chassis, Washers being used so that the Bolt shanks do not project beyond the Nuts on the upper surface of the 3" Pulley which is mounted boss down.

A pair of 2½" Flat Girders 5 bolted to the rear five slotted holes of the 4½" Angle Girders 1 are connected by 2" Strips 6 to the lugs of the 1½" x ½" Double Angle Strip 3, and provide the journals for a 4" Axle Rod carrying the rear pair of Road Wheels, with securing Spring Clips and Washers. The forward pair of Road Wheels rotate around 1⅛th" Bolts lock-nutted in the centre holes of ½" x ½" Double Brackets 7, the Bolts also securing Corner Angle Brackets as shown.

The Double Brackets 7 are free to rotate on 1⅛th" Bolts lock-nutted in the end slotted holes of the 2½" Flat Girder 2, and their turning is coupled by a 2½" Strip 8 lock-nutted by its end holes to the free lugs of the Corner Angle Brackets. A 2½" x 1½" Plastic Flexible Plate edged by two 3' Formed Slotted Strips completes the front of the chassis. A 2" Axle Rod is inserted in the boss of the 3" Pulley and fixed.

BODY (figs. 5-9)

Two 5½" Angle Girders 9 are connected front and rear by two 3½" Angle Girders, all slotted holes directed upward. A 3½" x 2½" Flanged Plate 10 is placed, flanges upward, between the 5½" Angle Girders 9, two holes from their rear ends. A 3" Pulley is secured, boss up, to the centre hole of the forward 3½" Angle Girder 9a, and to the centre forward hole of the Flanged Plate 10 behind, this last (½") Bolt also securing a 11053 'Crane' motor in place. Two Washers on the shank of this fixing Bolt space the 3" Pulley from the Flanged Plate 10. Two 5½" Strips 11 bolted at their lower ends to a 1½" x ½" Double Angle Strip, (fig. 5, fixed to the Plate 10 are supported in a vertical position by another pair of 5½" Strips 12 connected to them and to two ½" x ½" Angle Brackets bolted to the forward 3½" Angle Girder 9a.

The vertical 5½" Strips 11 are connected via their top holes by a lock-nutted 2" Screwed Rod carrying a ½" Pulley and a Fishplate, both loose on the Screwed Rod and retained in position by further lock-nuts. The forward 3½" Angle Girder 9a also has fixed to the forward face of its flange the following: a 2½" Flat Girder 13, a composite Flat Plate consisting of two overlapped 1½" x 1½" Flat Plates, and two 1" x ½" Angle Brackets 14. Two Semi-Circular Plates are fixed to the sloping pair of 5½" Strips 12, the right hand Semi-Circular Plate, (as viewed from the rear) being fixed by ½" Bolts each with four Washers on the shank for spacing purposes.

A 2½" x 1½" Plastic Flexible Plate 15 is secured by the Bolt fixing the lower end of the right hand 5½" Strip 12. A 2" Axle Rod journalled in the Semi-Circular Plates carries a 1½" Pulley and a Bush Wheel with their bosses to the right, and spacing Washers.

This is the *drum for hoisting the load* and it is driven by the 11053 motor already in place by a 6" Driving Band passed around the motor output shaft and the 1½" Pulley. *The drum for luffing the jib* is on a 2½" Axle Rod 16 journalled in the fifth holes from the bottom of the vertical 5½" Strips 11, (figs. 6 & 7). The Axle Rod 16 carries between the Strips 11 a ⅜ths" Washer and two ¾" Washers, spaced ½" apart and retained in that position by a small piece of cellophane tape, and a Collar.

On the outside face of the right hand Strip 11 the Rod 16 carries a 57t Gear. A Channel Bearing 17 lock-nutted to the third hole from the top of the left hand Strip 11 has a 1½" Pulley between its two sections, mounted loosely on a lock-nutted ¾" Bolt with its boss facing up.

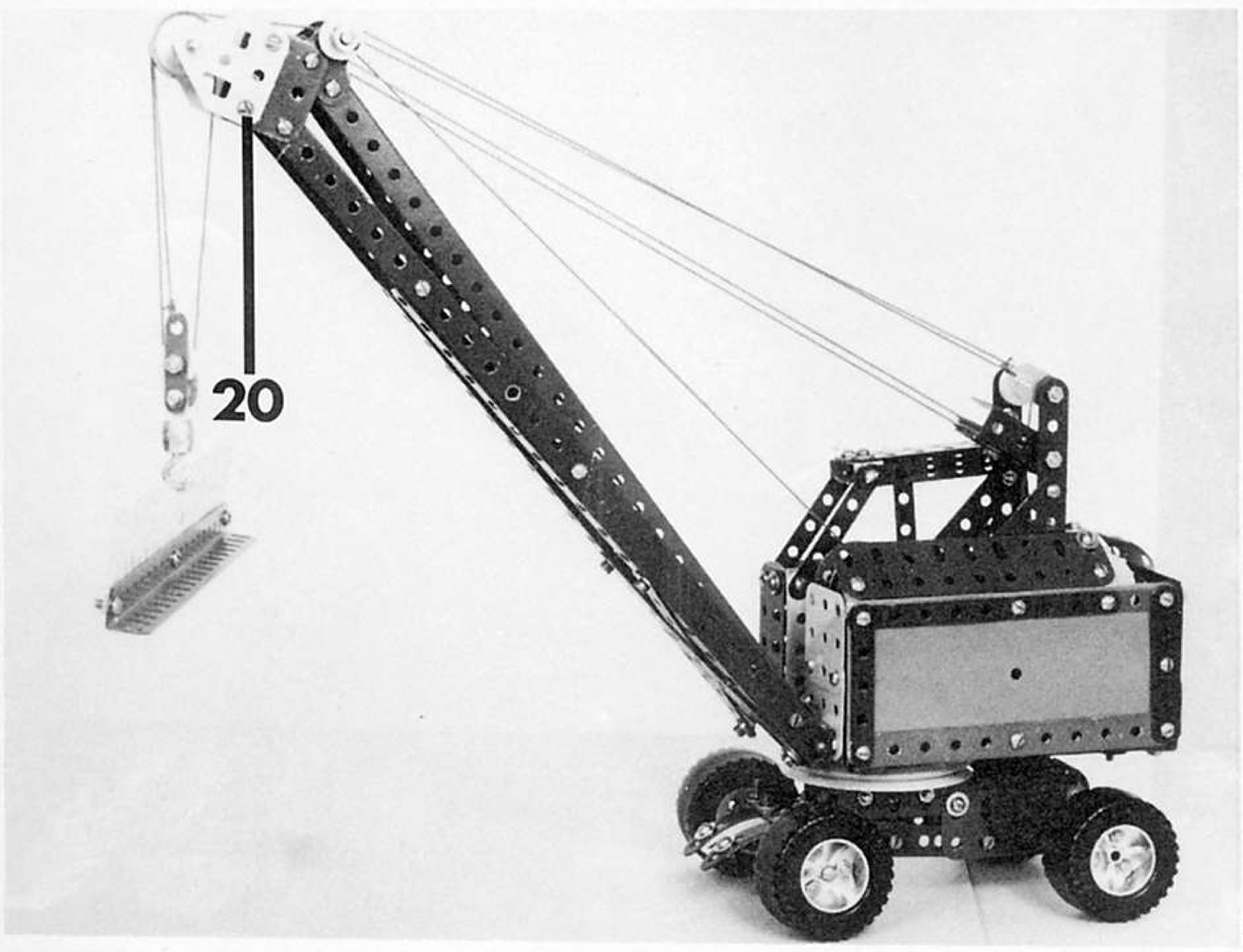
BODY SIDES (figs. 1, 2, 10).

These are each composed of a 5½" x 2½" Plastic Flexible Plate edged below by 5½" Strips and in front by 2½" Narrow Strips. Regular 2½" Strips edge the rear of these Plates, and the top edge is overlaid in each case by a compound 5½" Narrow Strip formed by overlapping 4½" and 1½" lengths.

The sides are connected at their rear edges by two 3½" x ½" Double Angle Strips 18, one being placed lugs upward, (fig. 7), and fixed to the rear centre holes of the side Plastic Plates which are in turn fixed by their lower edges to the slotted hole flanges of Angle Girders 9. A second 11053 'Crane' motor, (from the Power Pack), is bolted to the centre of the lower 3½" x ½" Double Angle Strip 18. A Double Bent Strip is bolted to the forward base holes of this second motor and fixed below to the 3½" x 2½" Flanged Plate 10 by a ½" lock-nutted Bolt.

The upper 3½" x ½" Double Angle Strip 18 can now be bolted in place at the rear of the top of the sideplates, and a 3½" x 2½" Flexible Plate is attached to it forming the rear of the body together with a 3½" Flat Girder overlaying its lower edge. Four stacked 2½" Stepped Curved Strips 19 are bolted to the underside of the rear 3½" Angle Girder to act as a counterweight, (fig. 9). A 2½" x 1½" Plastic Flexible Plate 17a is held between the top 3½" x ½" Double Angle Strip 18 and the rear Flexible Plate, the fixing Bolts bearing slightly on the second 11053 motor to ensure good meshing between a 19t Pinion on its output shaft and the 57t Gear already mentioned. The upper structure will be added later.

FIG. 1: The Mobile Crane fully described by Dr. Cameron.



THE JIB (figs. 1, 2, 7 & 9).

A pair of 12½" Angle Girders are connected below via their end slotted holes by a 2½" Strip, and above at their next to end holes by a Fishplate. A pair of 9½" Angle Girders lengthened by 7½" Strips overlapping their round holes by nine holes, (but fastened at the *eighth* hole) are fixed below by their second holes to the 12½" Angle Girders thus allowing a one-hole projection, (fig.7).

At the upper end of the jib, the 12½" Angle Girders and 7½" Strips are joined by two 1½" Flat Girders 20 to which Flat Trunnions are bolted. 1" Corner Brackets are also secured as shown and a 2½" Axle Rod journalled in their free holes carries ½" Pulleys and Collars. A 2" Rod in the apex holes of the Flat Trunnions carries two 1" Pulleys, (rims together), one fixed and one loose, with Washers for spacing purposes. The *pulley block* consists of a Fishplate and a 1½" Narrow Strip bolted to a Loaded Hook with a ½" Pulley on a ½" Bolt lock-nutted in place.

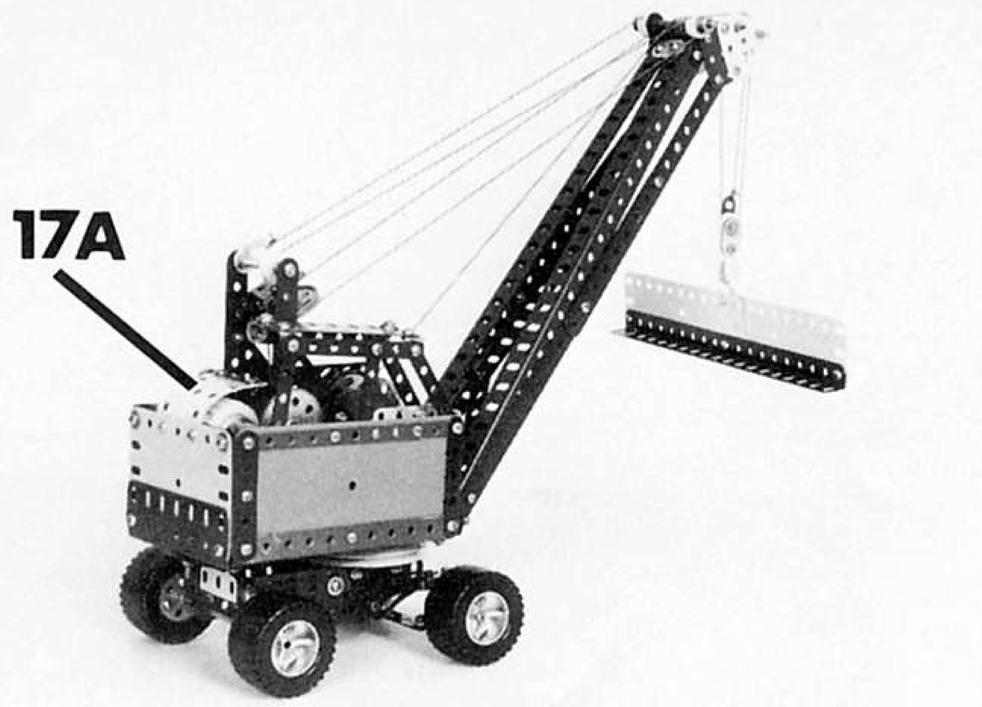


FIG. 2: Rear 3/4 view showing arrangement of cords and cab detail.

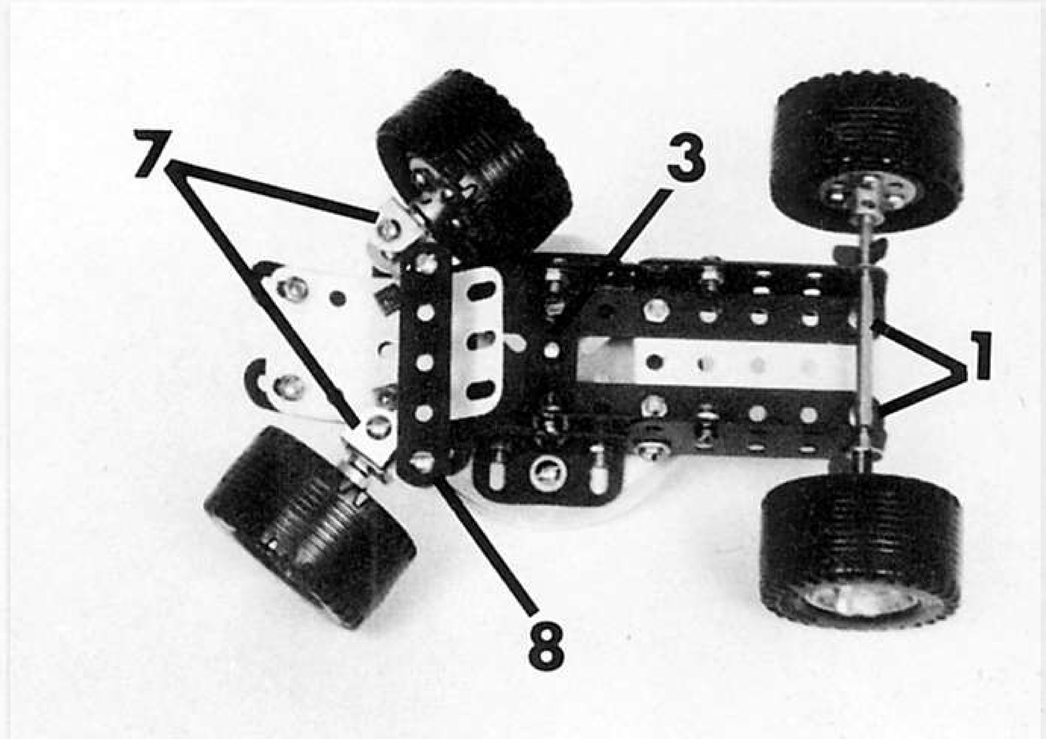


FIG. 3: The chassis as seen from below.

THE CORDS (figs. 1, 2 & 10).

The jib pivots on a 3½" Axle Rod passed through the projecting holes of the 9½" Angle Girders and the lugs of the 1" x ½" Angle Brackets 14, and held in place by Spring Clips. A length of Cord fastened to the Fishplate at the top of the mast is passed forward, around and then under the left-hand ½" Pulley at the top of the jib, back and around the 1½" Pulley within the Channel Bearing 17, then forward again, around and then over the right-hand ½" Pulley at the top of the jib, back and then over the ½" Pulley on the mast 2" Screwed Rod. Finally it is passed down from here to be secured with plastic tape to the rear winding drum.

Friction provided by the motor will be sufficient to prevent the jib from falling except when the motor is actuated. Check out the operation of the jib luffing at this point and leave wires connected to the motor. A length of Cord fastened to the load hoisting drum passes up the jib, over the 2" Axle Rod at its summit, over a 1" Pulley, around the ½" Pulley of the pulley block, back up and around the other 1" Pulley, then down again to be fastened to the 1½" Narrow Strip.

Again there will be enough friction to provide braking of the load except when the motor is actuated. Check this function and again leave the wires connected to the motor. Mount the body on the chassis by passing the 2" Axle Rod fixed in the chassis 3" Pulley through the Pulley of the body. Run the motor wires out through a convenient hole in the bodywork base.

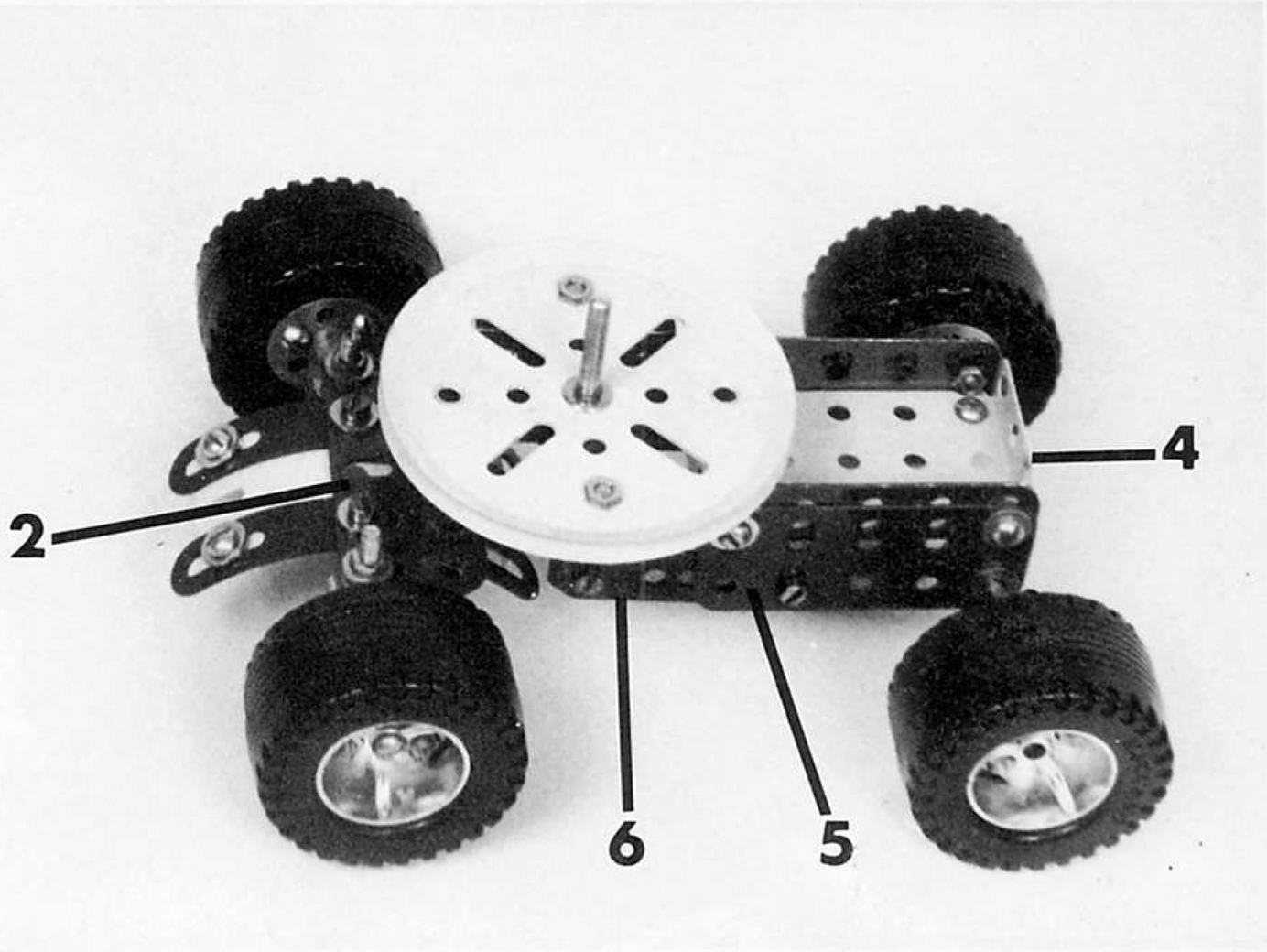


FIG. 4: Top view of the Mobile Crane chassis.

CAB AND SUPERSTRUCTURE (figs. 1 & 2).

The cab roof consists of a 3½" Flat Girder edged with two 3½" Narrow Strips held by ½" x ½" Angle Brackets. It is supported in front by two sloping 2½" Narrow Strips attached by ½" x ½" Angle Brackets to the top of the vertical forward 2½" Flat Girder 13, and toward the rear the inner, (left) 3½" Narrow Strip is held by being pinched between the junction of the two right hand 5½" Strips 11 & 12. Two vertical 3" Narrow Strips are added to represent window frames. On the left side of the body a 4½" Flat Girder is fastened above the side by ½" Obtuse Angle Brackets. The 2½" x 1½" Plastic Flexible Plate 17a already fixed to the rear has a 1½" Narrow Strip and a ½" Obtuse Angle Bracket bolted to its free end, and the Bracket is bolted to the rear hole of the 4½" Flat Girder thus completing the Mobile Crane.

ADDITIONAL NOTE

An alternative construction for the jib is to use four 12½" Angle Girders instead of the method described. This is purely a matter of taste. If parts are available, the counterweight should be made heavier.

FIG. 5: Interior of body as seen from the left, showing supports of both motors.

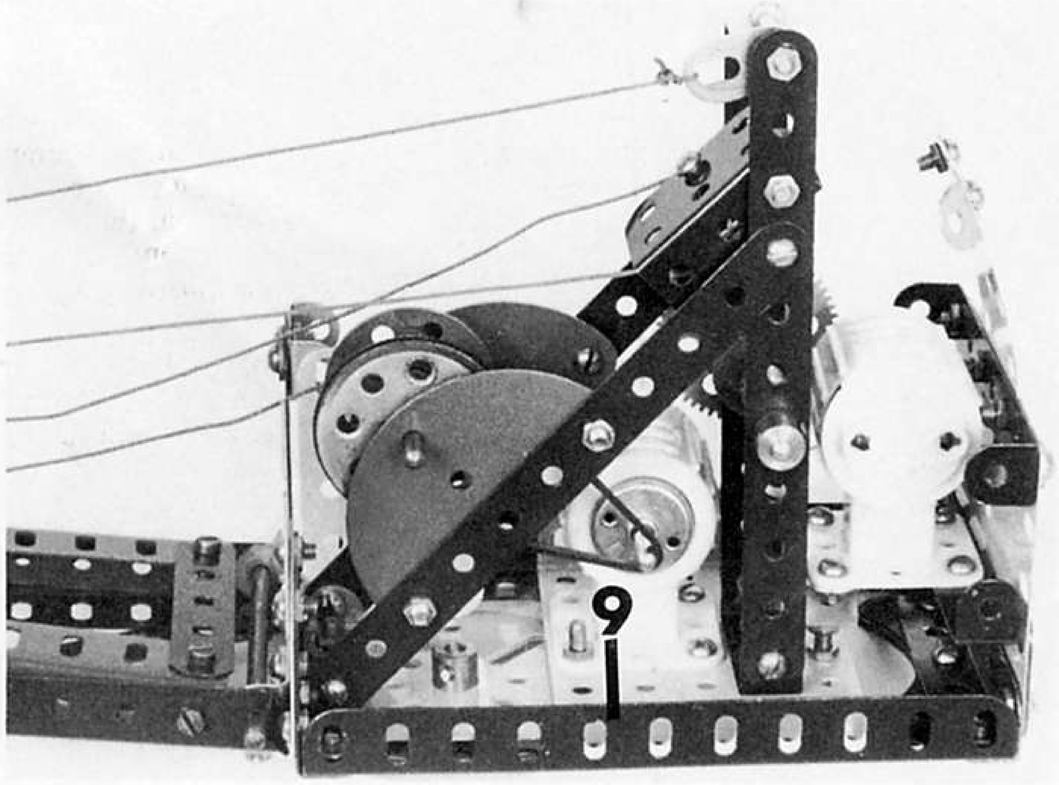
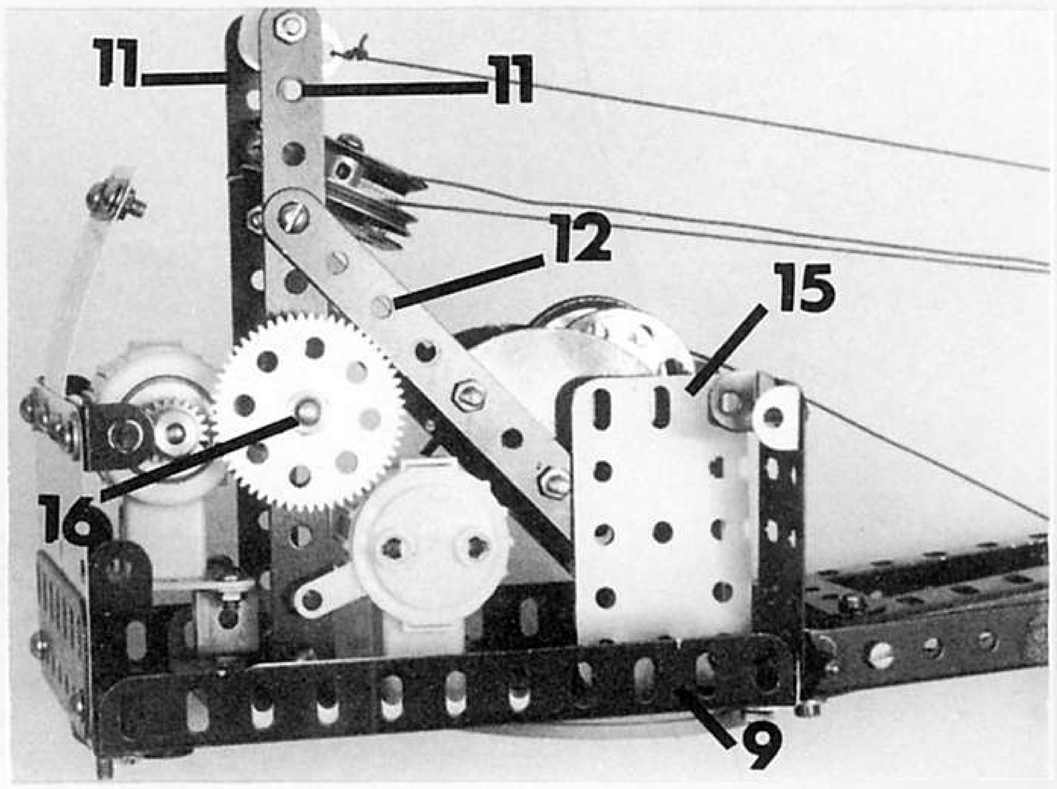


FIG. 6: View of body interior, from the right. Note gears do not mesh until back plate is secured to sides.



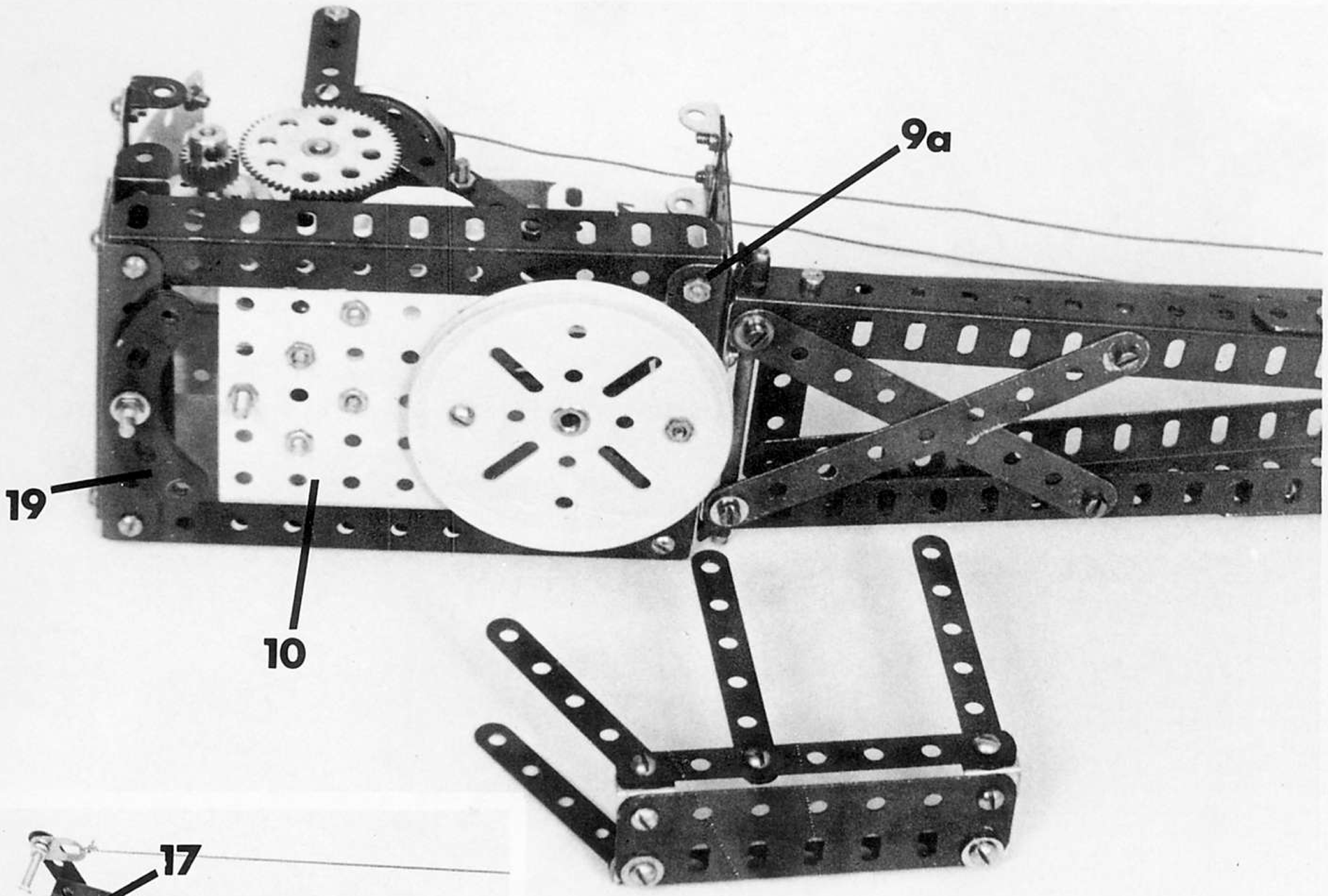


FIG. 9: Underside view of cab body showing cab superstructure detached.

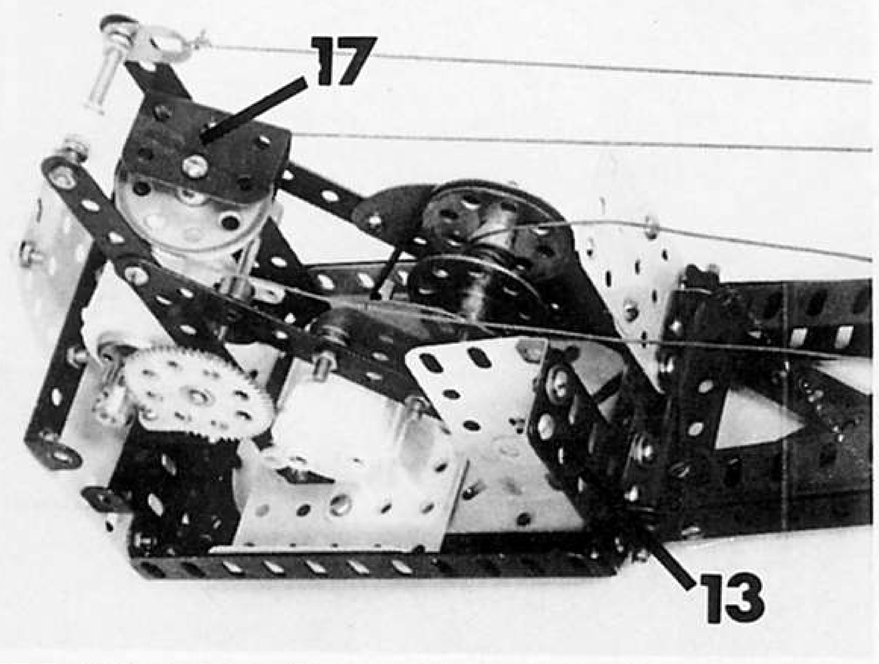


FIG. 8: Body from above, right, front, showing method of fixing the RH Semi Circular Plate.

PARTS REQUIRED

2 of No.	1B	8 of No.	12	1 of No.	27A
6 of No.	2	2 of No.	12B	4 of No.	35
2 of No.	2A	3 of No.	12C	130 of No.	37B
4 of No.	5	1 of No.	15B	146 of No.	37C
2 of No.	6	1 of No.	16	50 of No.	38
2 of No.	8	2 of No.	16A	2 of No.	38D
2 of No.	8A	2 of No.	17	2 of No.	40
2 of No.	9	2 of No.	19B	1 of No.	45
2 of No.	9A	2 of No.	21	2 of No.	48
2 of No.	9B	2 of No.	22	2 of No.	48B
2 of No.	9F	4 of No.	23	1 of No.	51
3 of No.	10	1 of No.	24	1 of No.	53
2 of No.	11	1 of No.	26	3 of No.	59
				2 of No.	74
				1 of No.	81
				4 of No.	90A
				1 of No.	103C
				2 of No.	103D
				4 of No.	103F
				2 of No.	103H
				2 of No.	111
				16 of No.	111A
				4 of No.	111D
				2 of No.	126A
				2 of No.	133A
				1 of No.	154A
				1 of No.	154B
				1 of No.	160
				1 of No.	186A
				4 of No.	187C
				1 of No.	190A
				3 of No.	194
				2 of No.	194E
				2 of No.	214
				2 of No.	215
				4 of No.	235
				2 of No.	235A
				2 of No.	235B
				2 of No.	235D
				4 of No.	235G
				2	11053 Motors and Battery Boxes

FIG.10 The body with sides attached but superstructure removed to show interior.

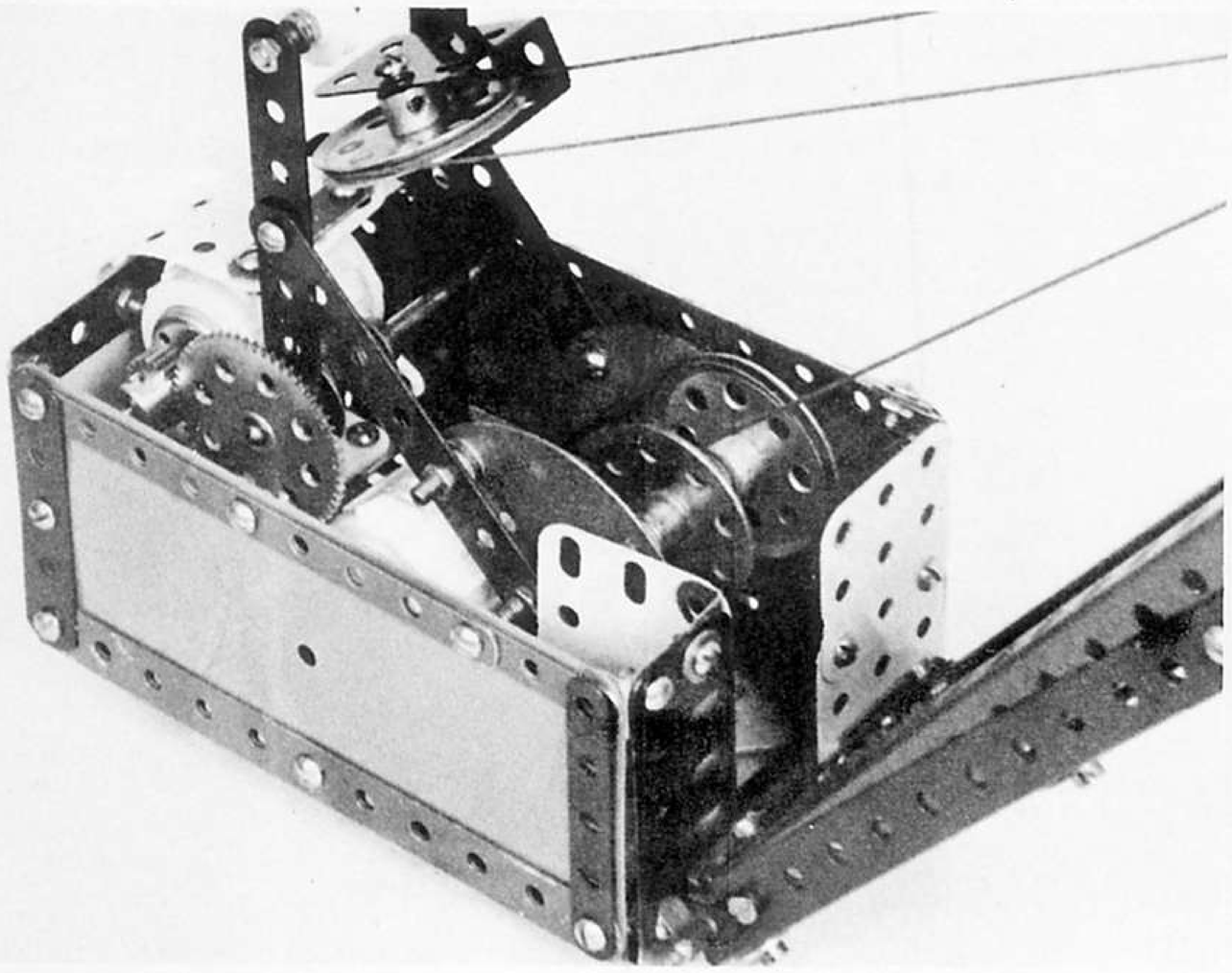
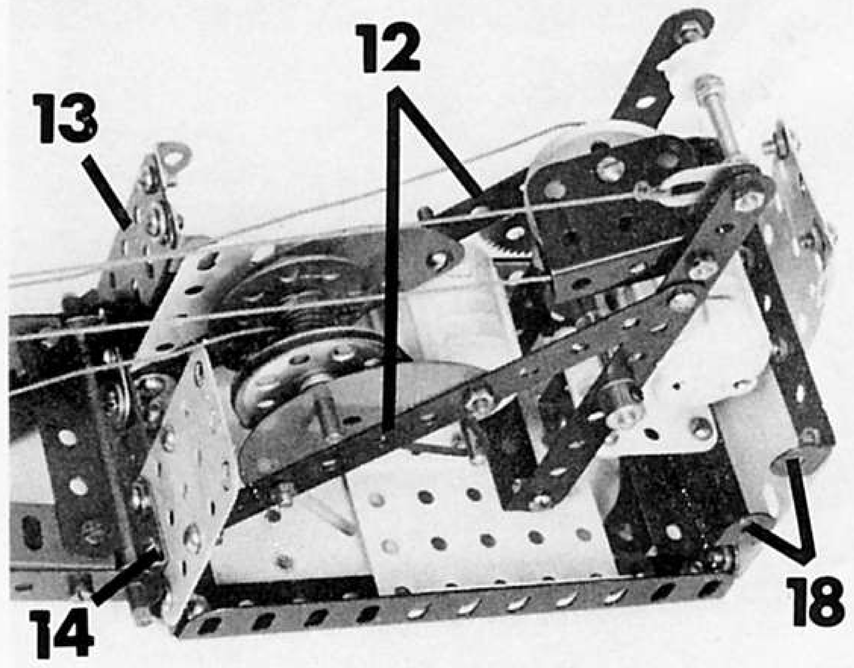
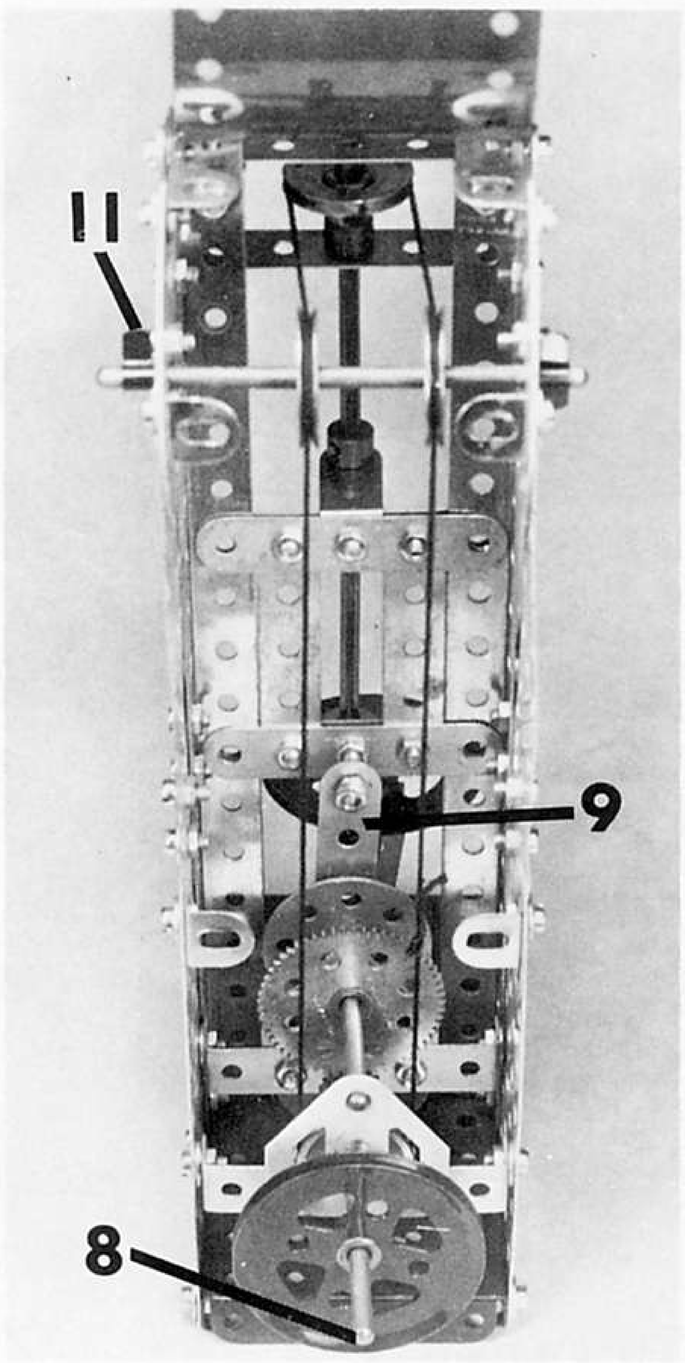
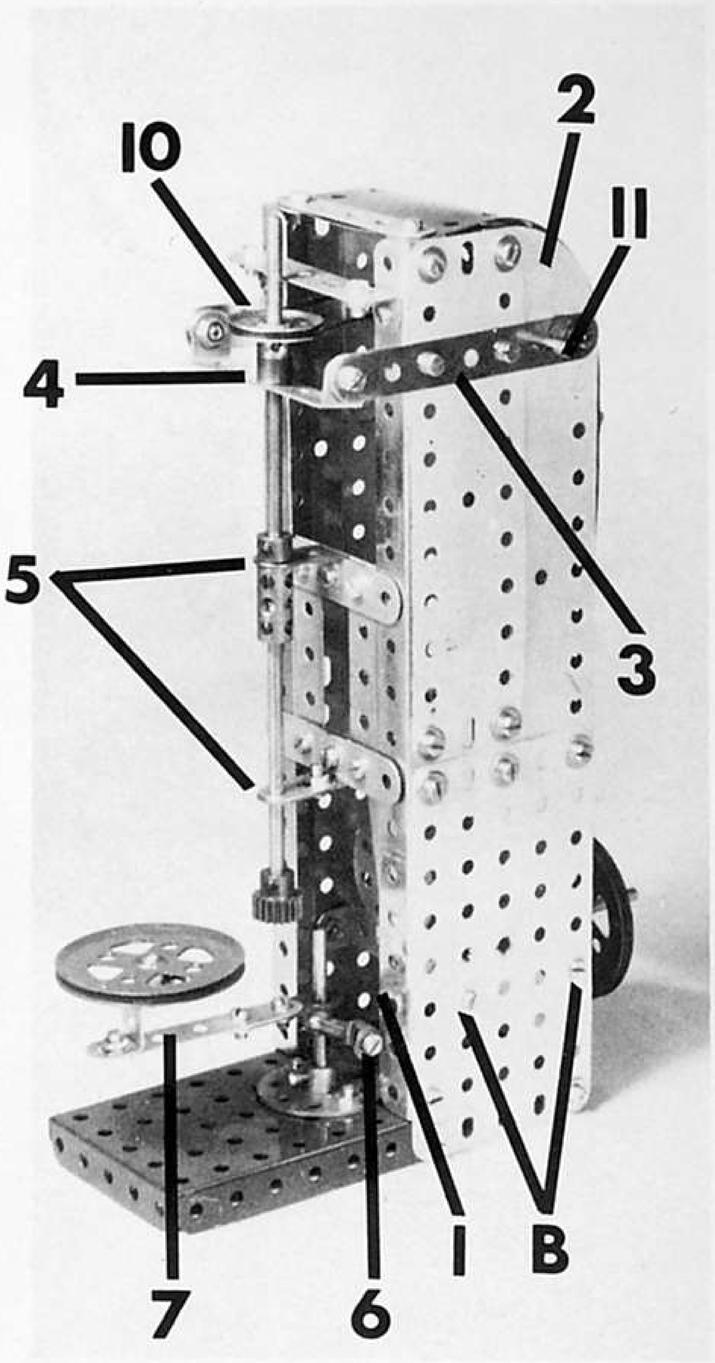


FIG. 7: The hoist drum can be clearly seen in this view from above.



TAYLOR'S TEKNIKIT





A year or two ago, Mr. Harold Taylor of Huddersfield, inspired by the Theme Set idea, developed for his own interest a "Machinery Multikit" – a set of standard parts specially chosen to enable interesting machine models to be built. Machines, after all, make perfect Meccano subjects and Harold proved the point by designing several excellent working models for the 'kit'. We saw them and liked them. We thought you would like them too. The exact number of parts required will vary from model to model, but all the models can be built from the contents of "Taylor's Teknikit" as we have named it. The 'kit' is not commercially available, of course, but a list of the contents is given below for those who wish to collect the parts.

GEAR CUTTING MACHINE

A 5½" x 2½" Flanged Plate forming the base is extended upwards on each side by a 4½" x 2½" Flat Plate to the forward edge of which is affixed a 9½" Angle Girder 1. The sides are then completed by 5½" x 1½" Flexible Plates and Semi-Circular Plates 2. Two 3½" Strips 3 are bolted in the positions shown, and these support at their forward ends a 2½" x ½" Double Angle Strip 4. The Angle Girders 1 are connected at a point two holes from the top by a 2½" Strip held by an Angle Bracket affixed to each Girder 1. Before connecting the Girders 1 though, it is necessary to construct a vertically sliding sub-assembly which is inserted between the Girders 1 prior to final assembly.

The sub-unit consists of two vertical 2½" Strips connected at each end by two horizontal 2½" Strips, these horizontal Strips being affixed to either side of the vertical Strips and further separated by Washers on each Bolt shank. 1½" x ½" Angle Brackets 5 are bolted in the positions shown, the lower Angle Bracket carrying a Fishplate overlaid on the slotted hole to convert it to a round hole for journalling purposes. After insertion between the vertical Angle Girders 1, the sub unit should slide freely up and down. Any excessive 'play' should be reduced to the minimum possible, perhaps by careful selection of thinner Washers for spacing the Strips.

A Bush Wheel is bolted to the centre of the 5½" x 2½" Flanged Plate forming the base, and this holds a vertical 2" Axle Rod. This Rod in turn carries a Crank, which can be easily adjusted up or down by means of a Threaded Pin and a Collar, gripping tightly on the shank of a 3/4" Bolt 6., the other end of which is screwed into the threaded bore of the Crank. The Threaded Pin and Collar thus form a neat handle which makes easy work of adjusting the screw 6. A 2½" Strip 7 bolted to the Crank supports a 2" Pulley on a Reversed Angle Bracket, forming the work table.

The mechanism allows for the rotation of the vertical built-up Rod carrying the cutting tool, and the up and down movement of the sliding carrier. A 3½" Axle Rod 8 is journalled in two 2½" x ½" Double Angle Strips held by Bolts at positions B in the photograph. These two Double Angle Strips carry Flat Trunnions in the apex holes of which is journalled a 2" Axle Rod carrying a 57t Gear and a Bush Wheel. The 57t Gear meshes with a 19t Pinion on Rod 8, which also carries a 1" Pulley. The Bush Wheel is connected to the lower edge of the vertically sliding carrier by a lock-nutted 2½" Strip 9.

A similar Pulley 10 is held at the top of a built-up Rod consisting of a 4" Rod with Keyway connected by a Coupling to a 3½" Rod. This built-up Rod must rotate freely in the centre hole of Double Angle Strip 4, the slotted hole of top 1½" x ½" Angle Bracket 5, and the round hole of combined 1½" x ½" Angle Bracket/Fishplate 5 at the bottom of the carrier. The slotted hole in the top Angle Bracket 5 permits a slightly easier operation as the built-up Rod is then only held in two round holes. A Collar immediately above the top Angle Bracket 5 ensures that the built-up Rod follows the motion of the carrier.

The 1" Pulley 10 is held by a Key bolt, and the normal Grub or Set Screw is omitted. This enables the Pulley to remain in position while allowing the built-up Rod to move up and down. A Collar is used for spacing purposes just below the Pulley 10, which is connected to the 1" Pulley on Rod 8 by Cord jockeyed over two 1" Pulleys without Boss on a 3½" Rod 11 held by Spring Clips as shown. A cutting 'tool' is fixed to the bottom of the vertical built-up Rod, this is represented by a 19t Pinion.

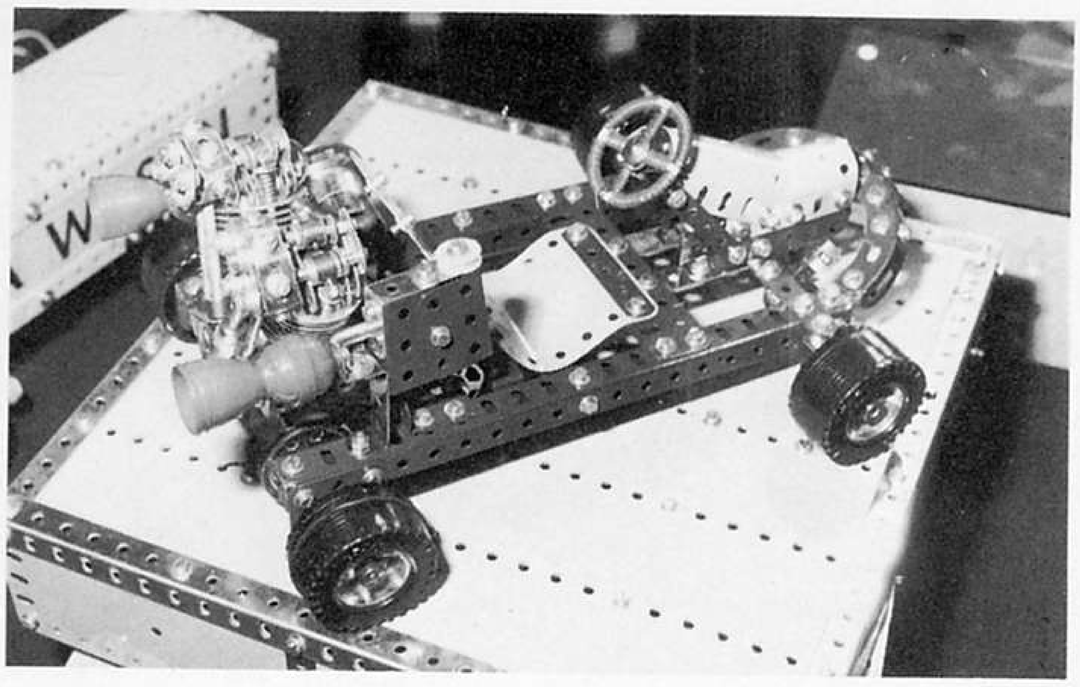
The top and back can be filled in with suitable sizes of Plastic Flexible Plates held by Angle Brackets where convenient to complete the model which can be powered from virtually any source via the 2" Pulley on Rod 8.

PARTS REQUIRED

2 of no. 3	30 of no. 38
10 of no. 5	4 of no. 48a
2 of no. 8a	1 of no. 52
1 of no. 10	2 of no. 53a
8 of no. 12	2 of no. 59
2 of no. 12b	1 of no. 62
3 of no. 16	1 of no. 63
2 of no. 17	2 of no. 111
2 of no. 20a	1 of no. 111c
2 of no. 22	1 of no. 115
2 of no. 22a	2 of no. 126a
2 of no. 24	4 of no. 189
2 of no. 26	1 of no. 194a
1 of no. 27a	2 of no. 194c
2 of no. 35	2 of no. 214
61 of no. 37b	1 of no. 230
64 of no. 37c	1 of no. 231

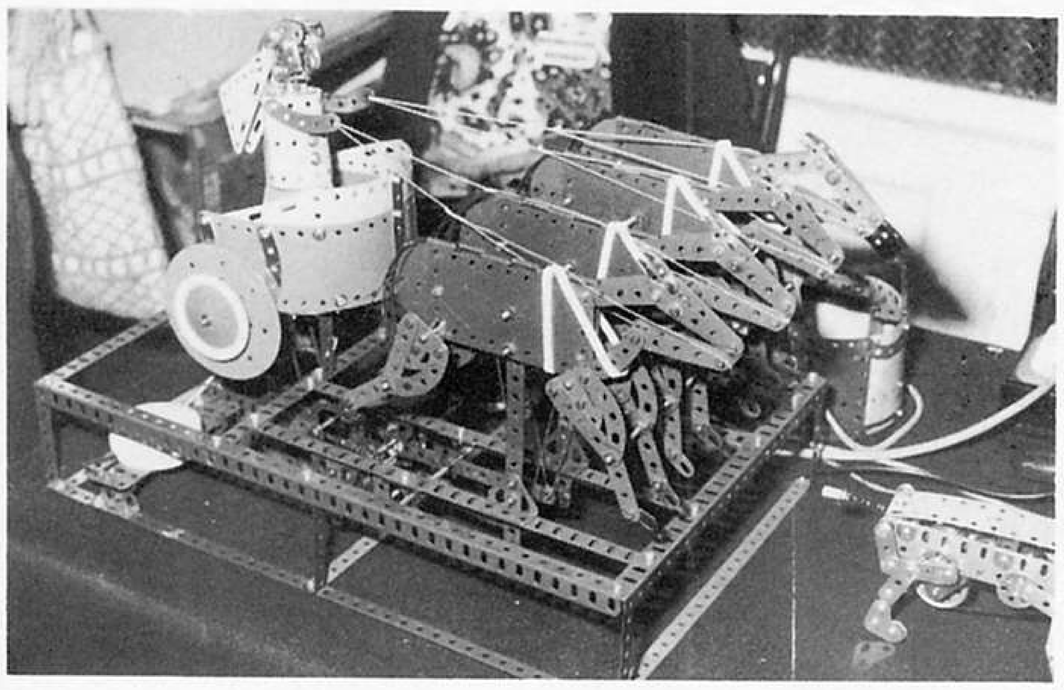
TAYLOR'S TEKNIKIT CONTENTS LIST

Part No.	Qty	Part No.	Qty
2	4	53a	2
3	2	59	6
5	10	62	1
8a	2	63	1
9	2	63d	1
10	4	64	1
11	2	80c	1
12	8	108	2
12b	2	110	1
15b	1	111	2
16	3	111a	2
17	2	111c	6
18a	2	115	1
20a	2	125	2
22	3	126	2
22a	2	126a	2
24	2	133a	2
26	2	160	1
27a	1	188	4
27f	2	189	4
32	1	190	2
35	2	194a	2
37b	64	194c	2
37c	64	214	2
38	30	230	1
43	1	231	1
48a	6	235a	2
51	1	235d	2
52	1	235g (1½" N.S.)	2



Inspired by the Set 5 version but given the '5-Star treatment', Geoff Wilson's Go-Kart on rotating display stand.

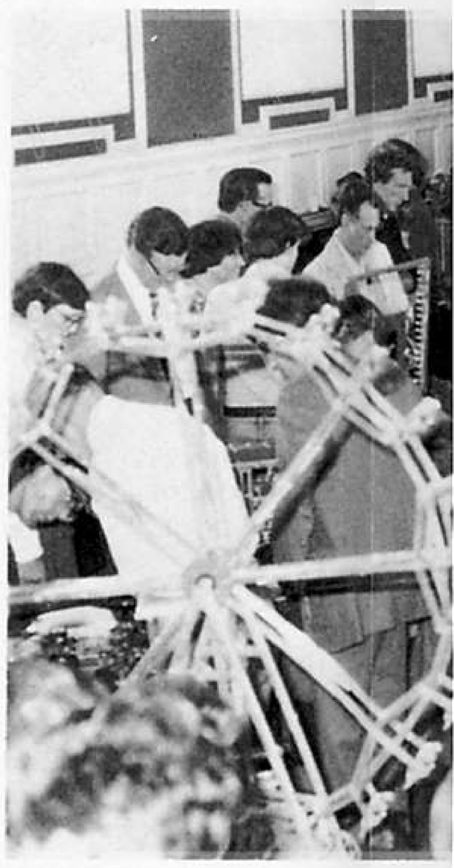
Computer operation comes to Meccano! The Gantry Crane in the background benefits from full pre-programmed automation. An almost infinite variety of different sequences can be input on the keyboard, as Ivor Dickin demonstrates.



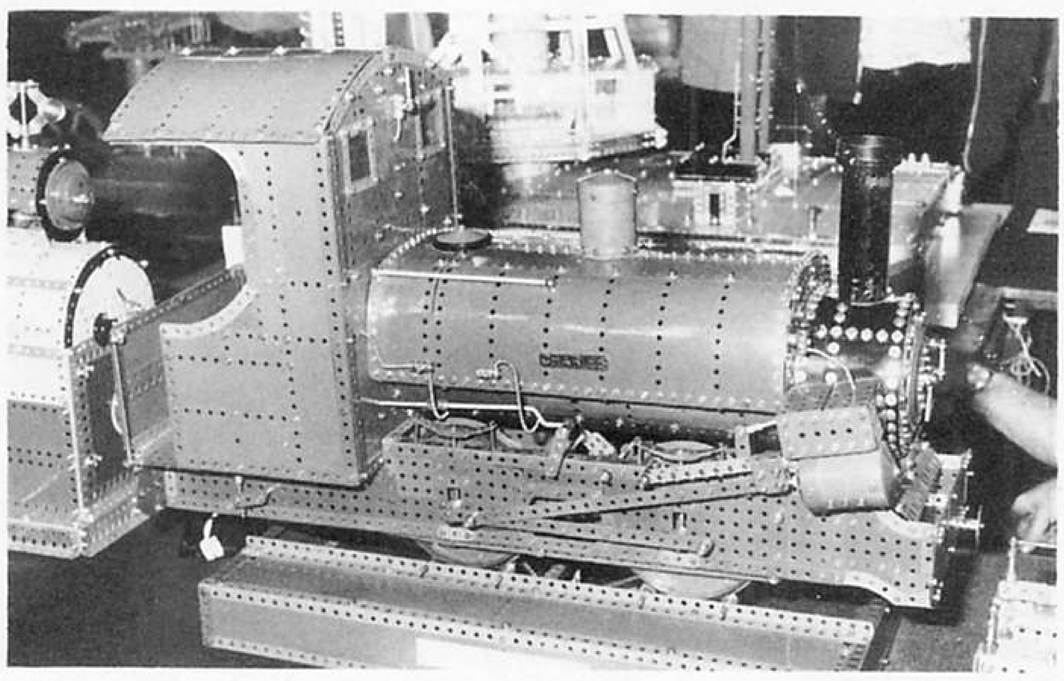
One doesn't see many of these on the way to the Forum! Bill Roberts' highly original Roman Chariot with four operating 'horses'.

HENLEY

A photo-report on the many fine models shown at the Henley-on-Thames Meccano Exhibition, August 29th & 30th 1980.

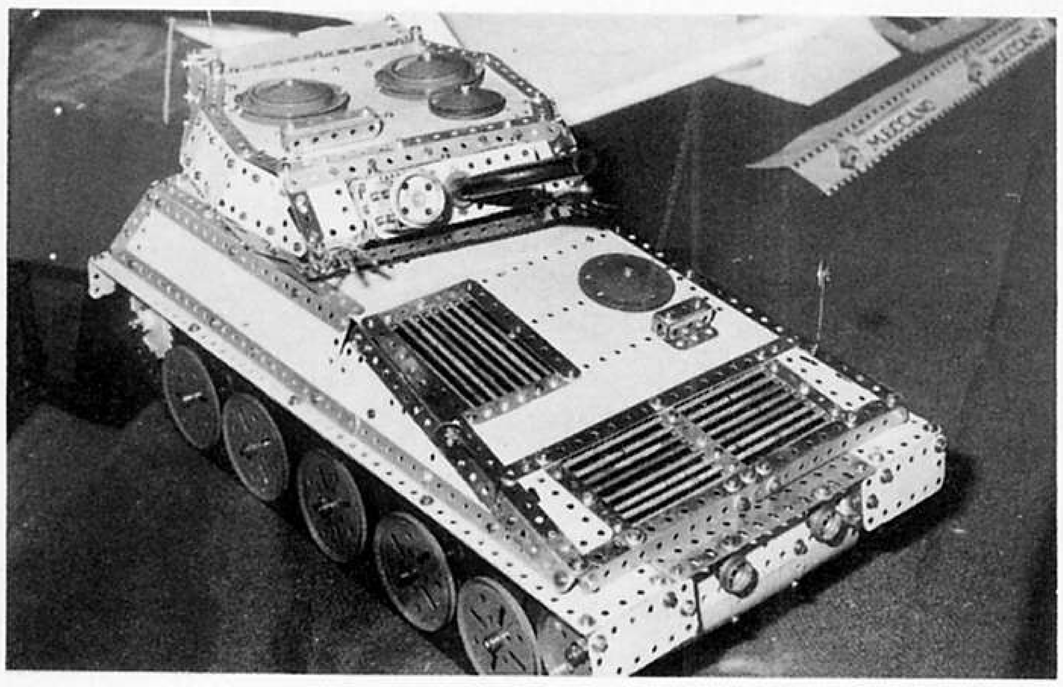


Right: A general view of the hall on Saturday afternoon showing the obvious level of interest from members of the public!

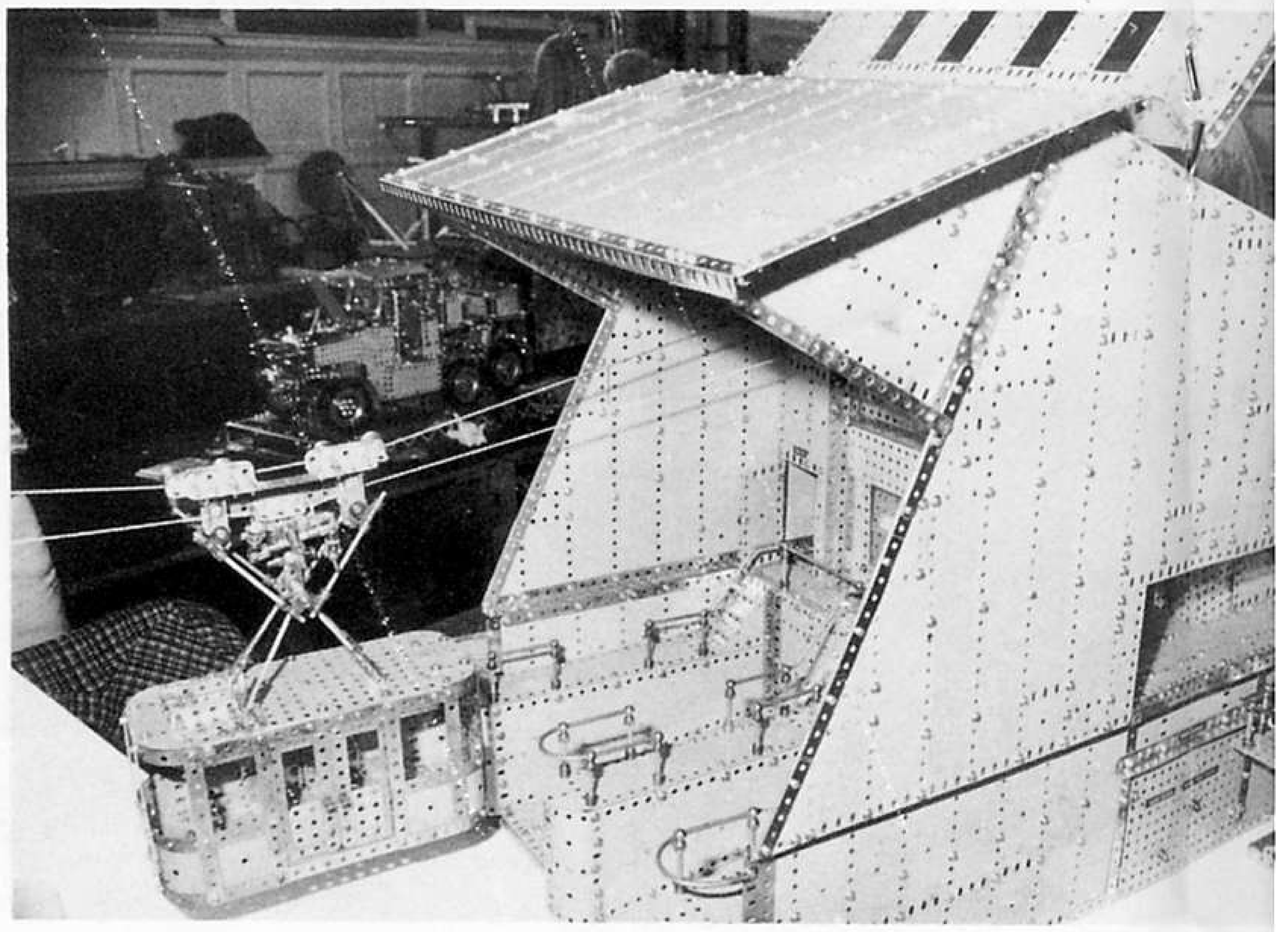


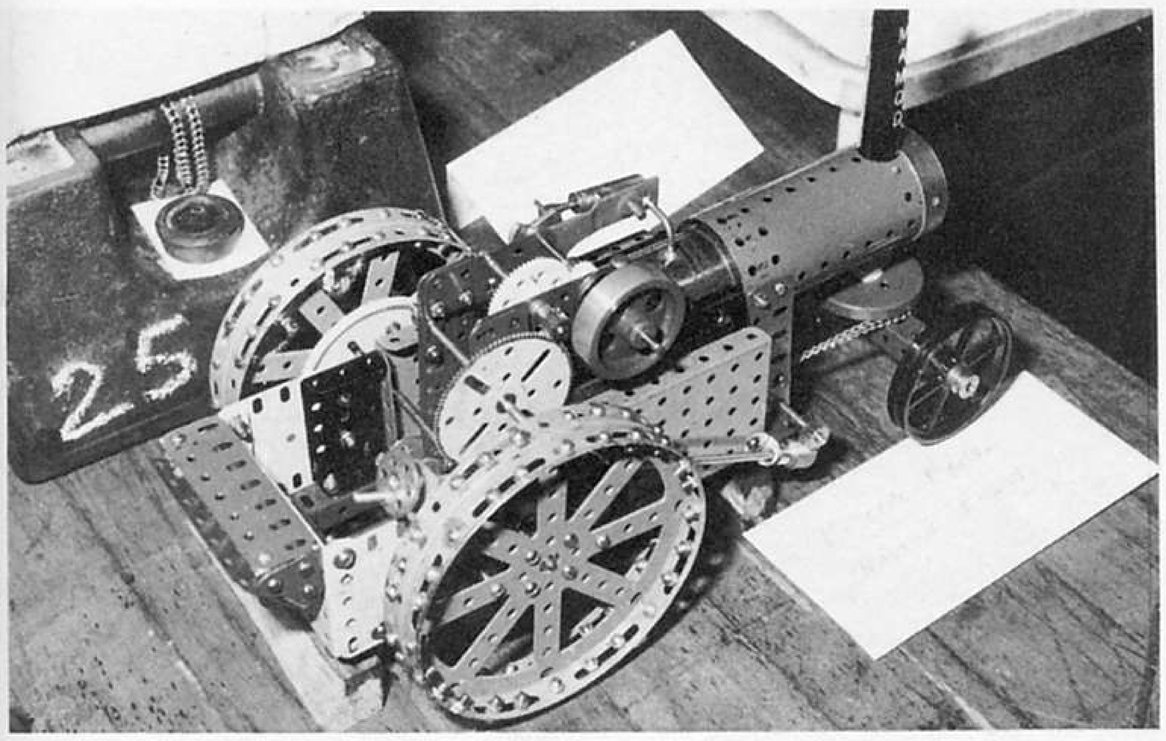
A Power Drive Unit concealed in the base provides the power for Peter Greenhalgh's 1907 'Charles' Locomotive.

Below: A member of the Henley Meccano club, Mervyn Wood took nine months to complete this ⅛ scale version of the famous Scorpion tank. Turret traverse, Gun elevation and separate powered tracks are incorporated.

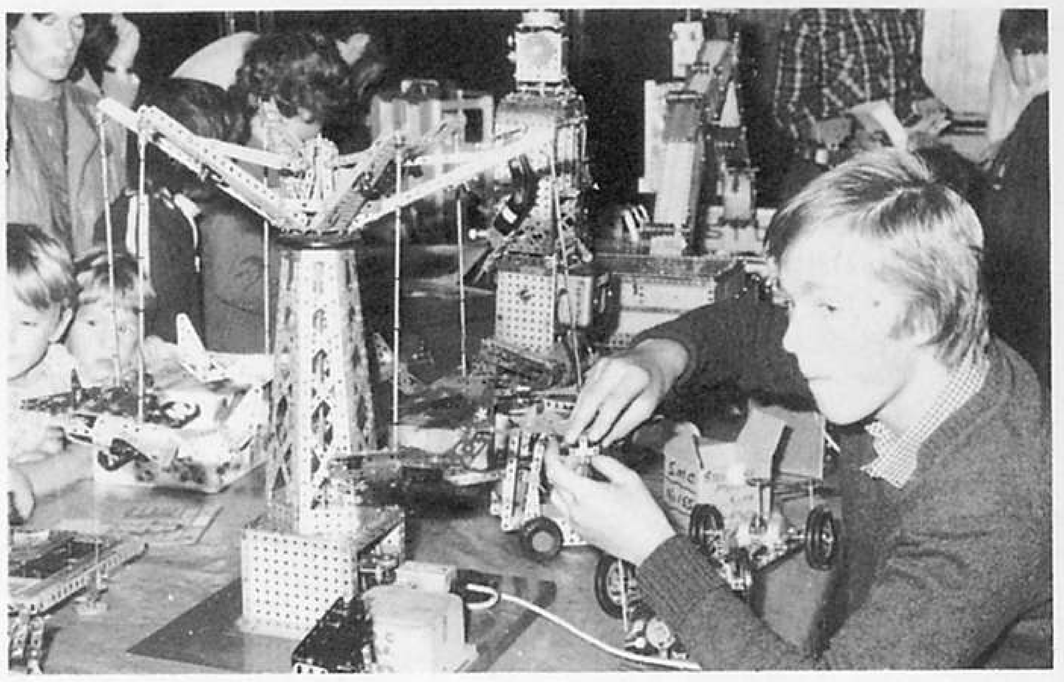


Below: A lavishly produced Cable Car Power House by Nick Rodgers. The rear of the roof section is position to allow display of the winch mechanisms.

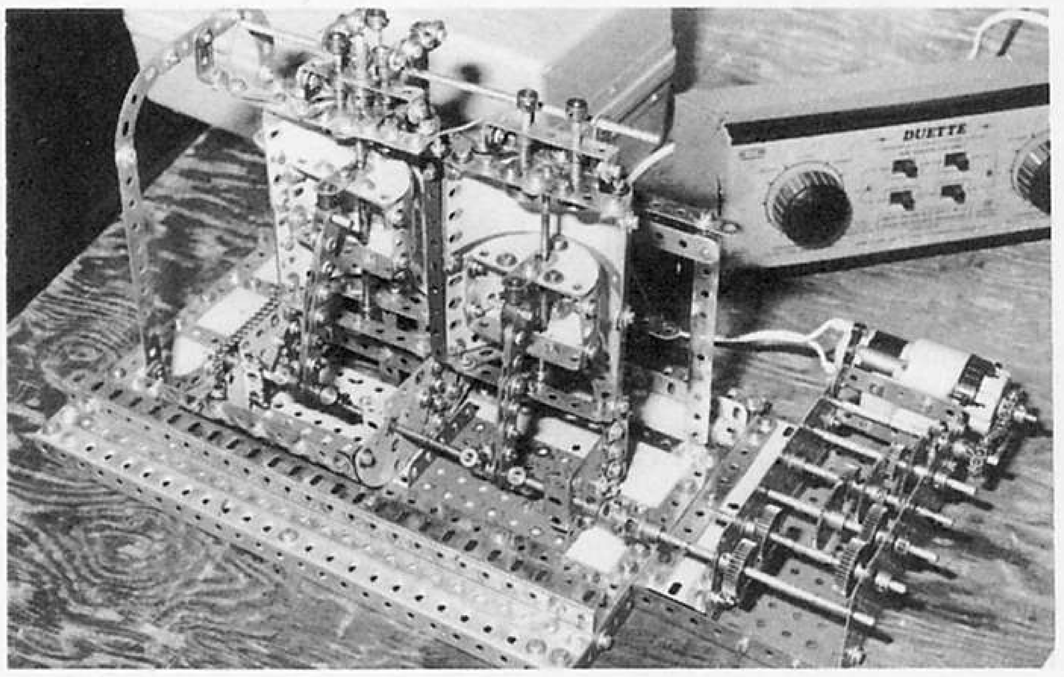




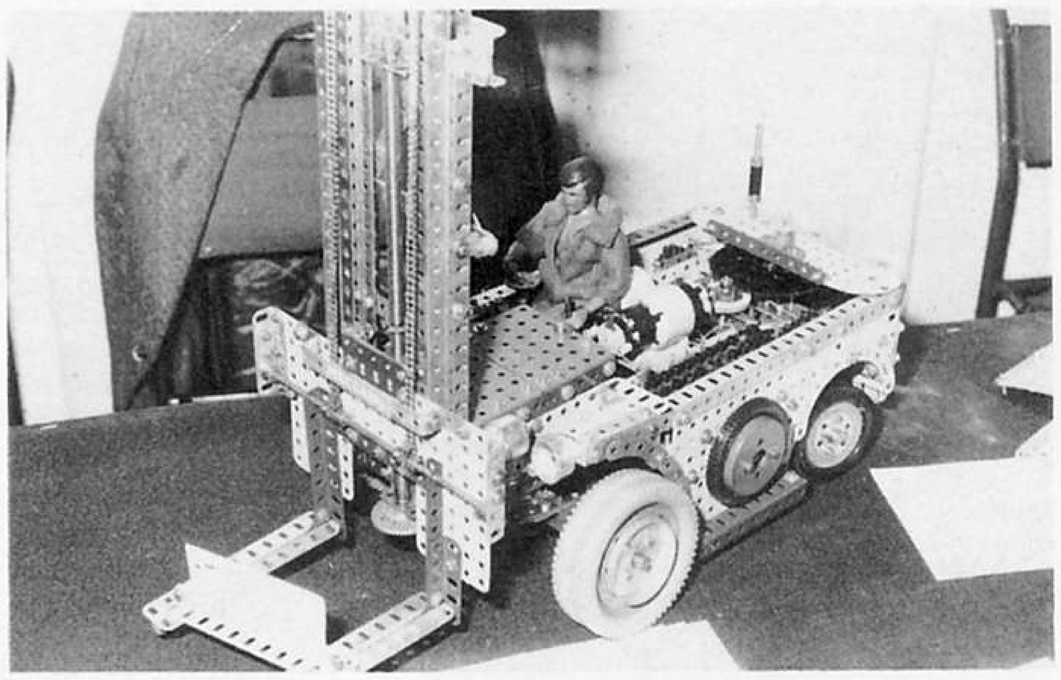
Mr. E. J. Palmer of Somerset employed a Mamod Steam Engine as the power source for this very neatly modelled Traction Engine.



Jonathan Clark of the Stevenage Meccano Club adjusts part of an Aeroplane Fairground ride model, one of a large number of attractive SMC exhibits.

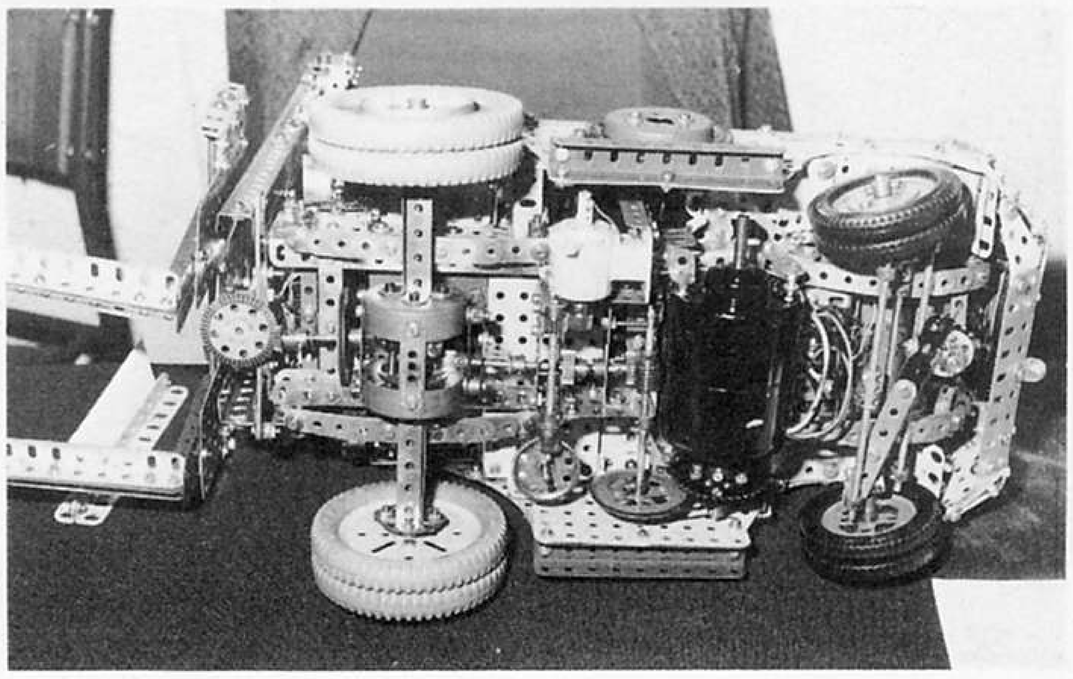


A 'cut-away' view of a four-stroke two cylinder Petrol Engine with crankshaft, pistons and valves etc; by Paul Dickin of Wellingborough.



Neil Bedford of Sidcup used his Set 9 with extras to complete this very capable Fork Lift Truck in just six weeks.

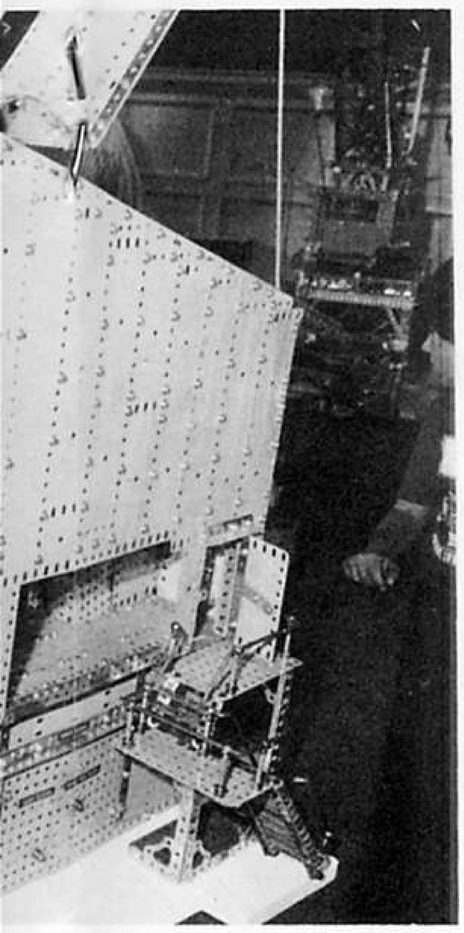
Below: This underside view of Neil Bedford's Fork Lift Truck conveys an accurate impression of the model's complexity. Every function of the original is reproduced.

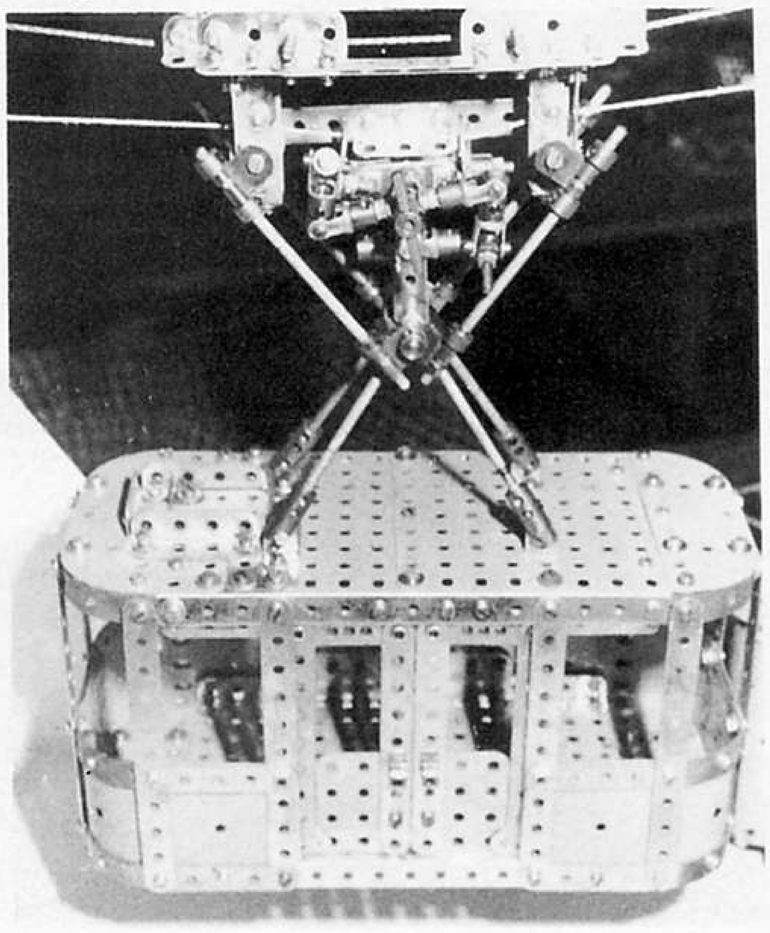


1980

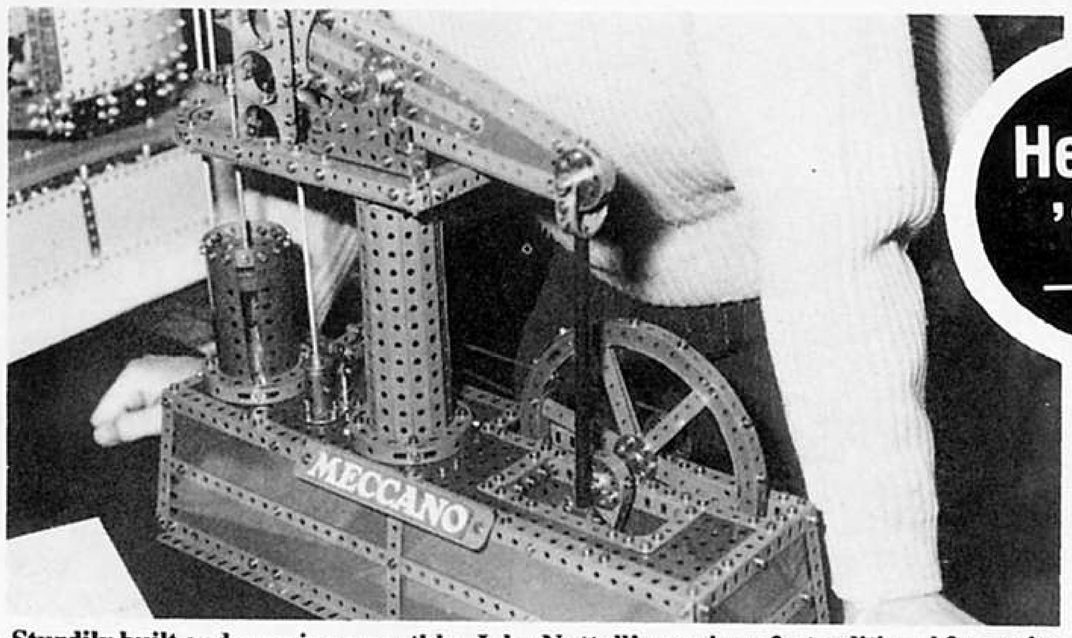
Below: Close-up of the Cable Car by Nick Rodgers which featured opening doors and accurately reproduced suspension system.

oof section is shown in the open

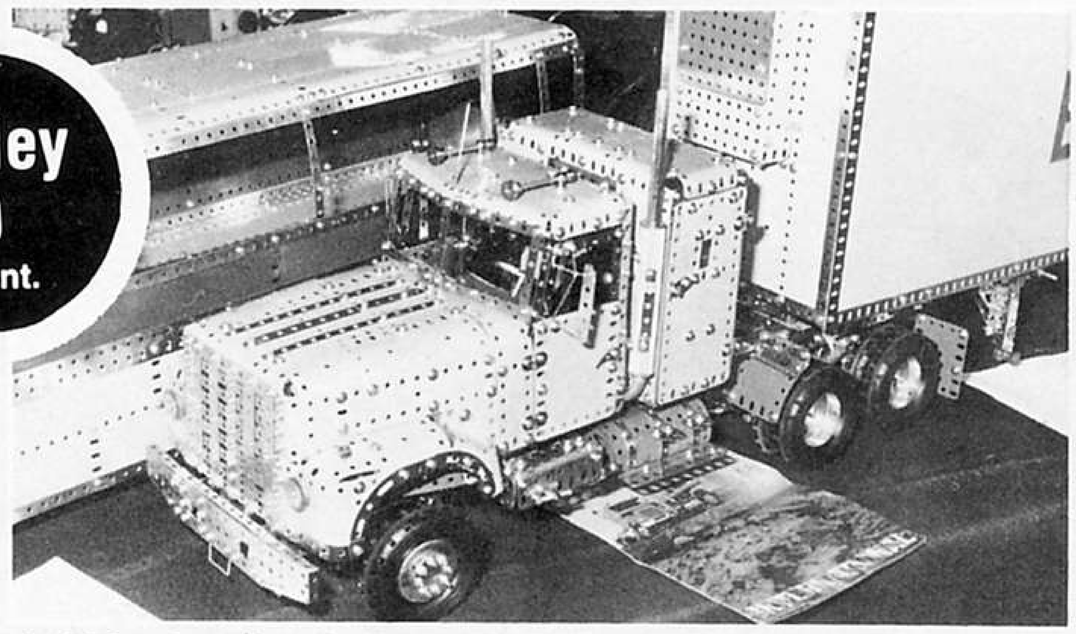




Henley '80 — Cont.

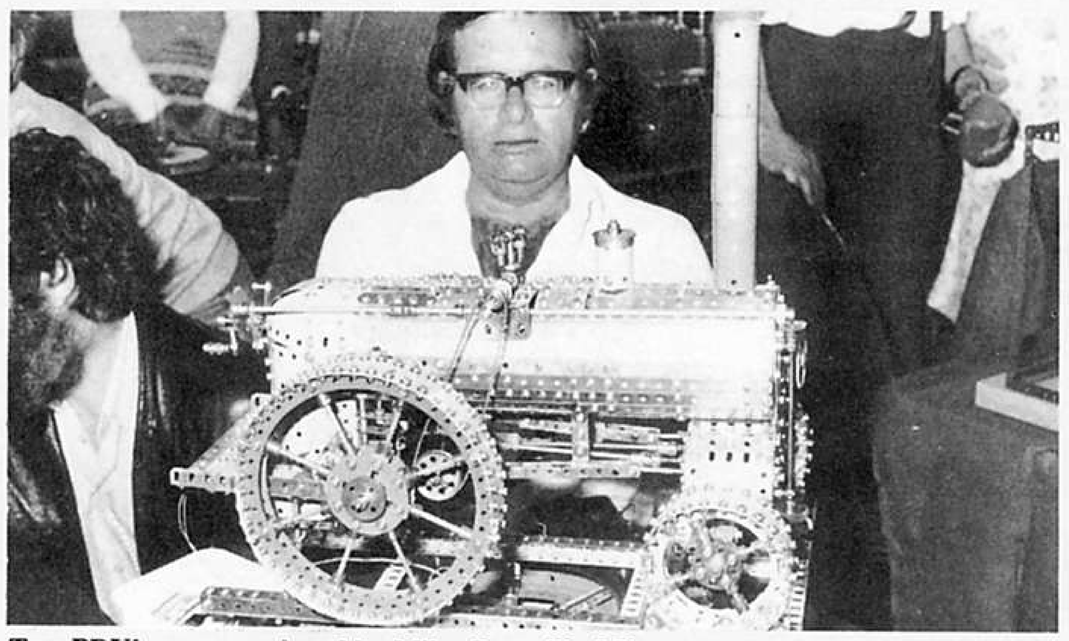


Sturdily built and running smoothly, John Nuttall's version of a traditional favourite, the Beam Engine, used red/green parts to eye-catching effect.



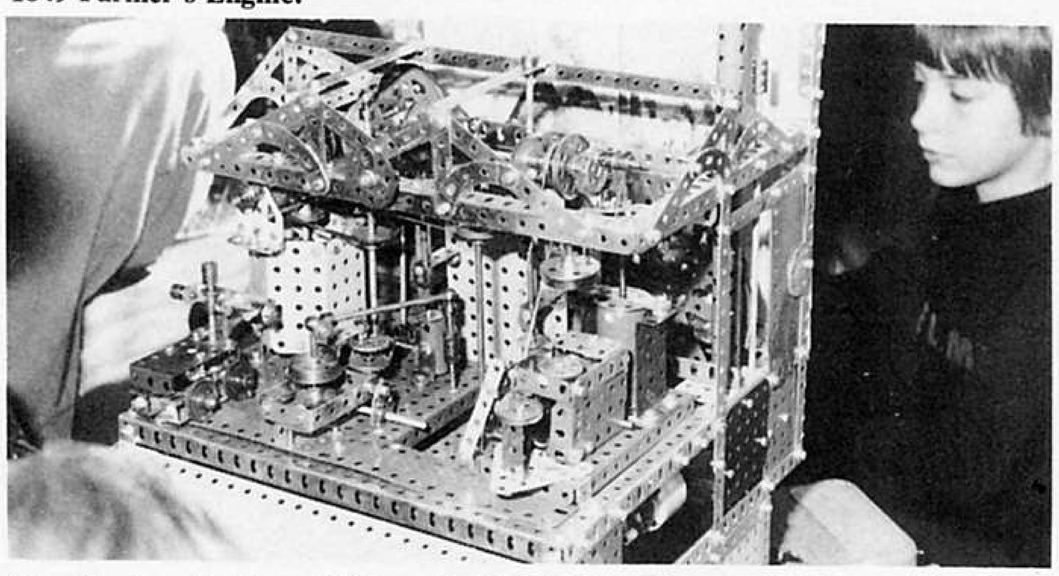
A 1/10th scale version of an International Harvester Teamster 500 Truck, with full chassis and interior details, by G. Watkins of Newport, Gwent.

On the left, Richard Hogg of Farnham, Surrey, is seen demonstrating the motions of a Meccano Gyroscope to Henley Meccano Club member Andrew Smith.



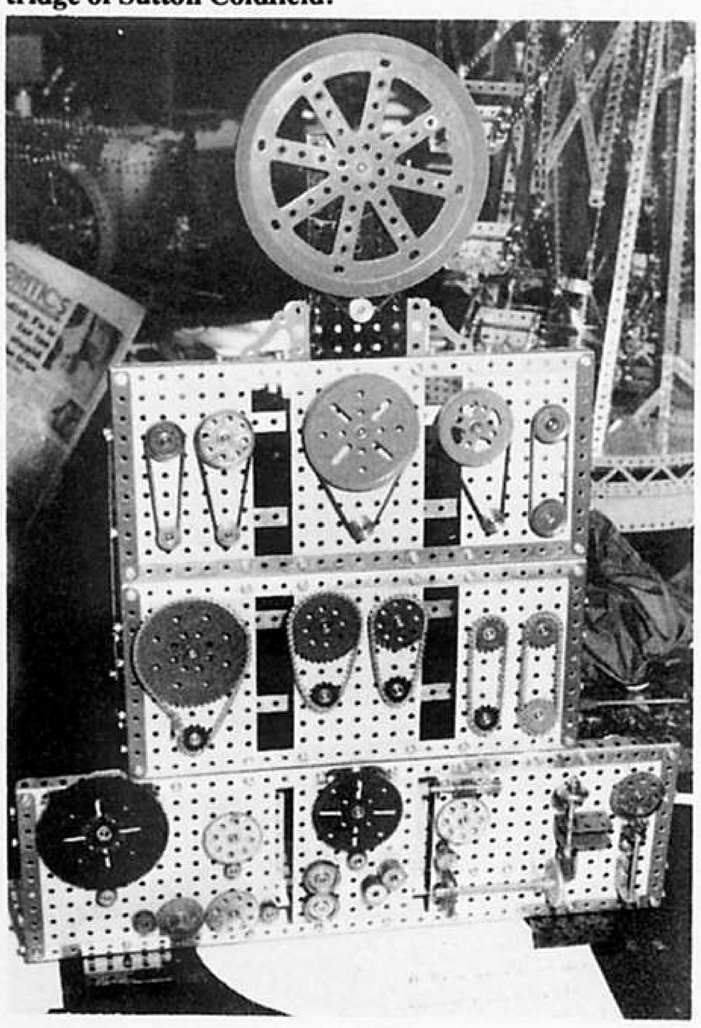
Two PDU's were employed by Mike Cotterill of Skegness, to power his version of an 1849 Farmer's Engine.

The presentation of prizes, from left: Geoff Wright, show sponsor; Chris Shute, 1st prize winner in the senior section; Mr. K. Askwith Managing Director of Airfix Products Ltd. (presenting the prizes) and Mr. Daniel French, also of Airfix Ltd. Chris won a Set 5 and an Action Pack Construction Kit for his winning entry, a clock.

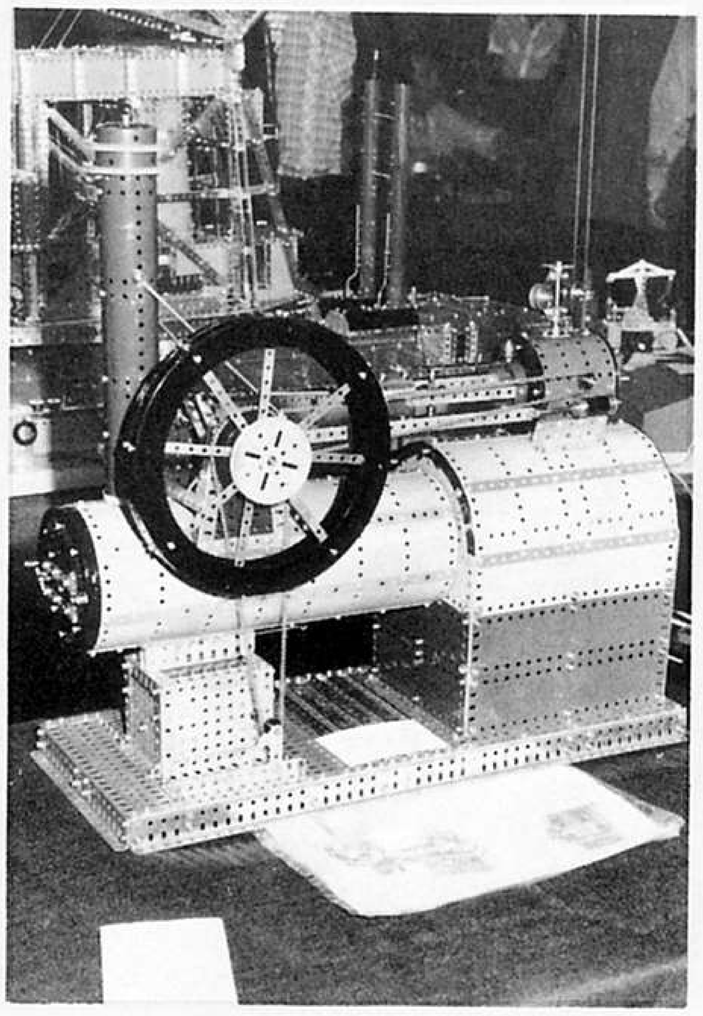


John Westwood of Forest Hill won the Holy Trinity Meccano Club's prestigious Stuart Wilson Cup award for this highly interesting 'Gladstone Working Pottery Museum' consisting of many separate working machine tools all powered by one PDU in the base.

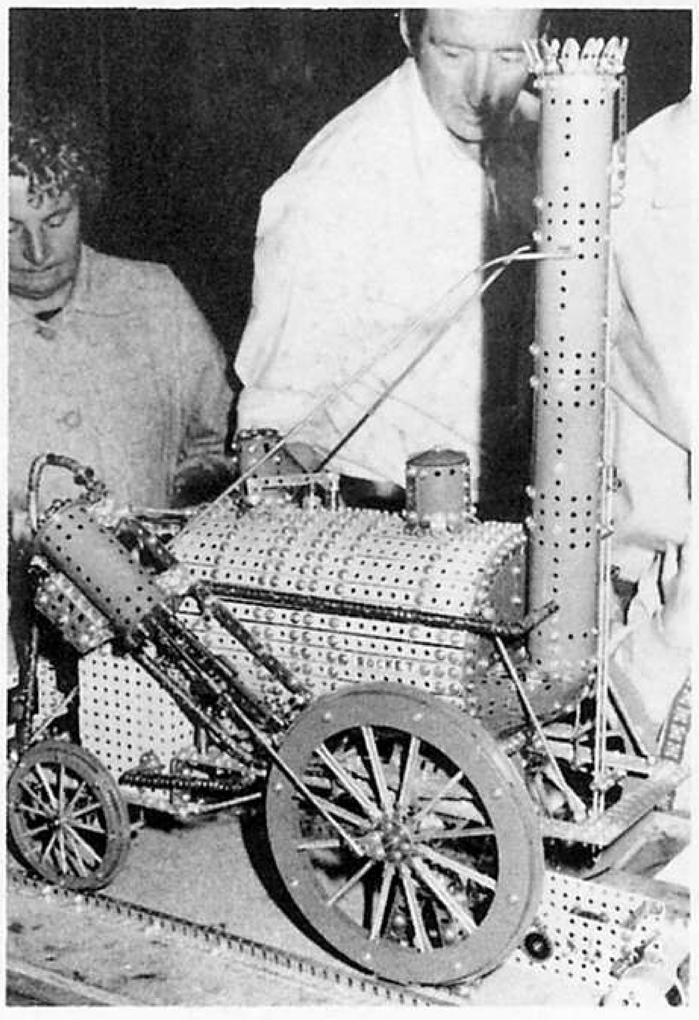
Below: A display of the many different reduction drives obtainable with standard Meccano parts, by Alan Partridge of Sutton Coldfield.



Below: An Overtype Stationary Steam Engine from the 1937-53 Set 10 manual, by David Cogman of London.

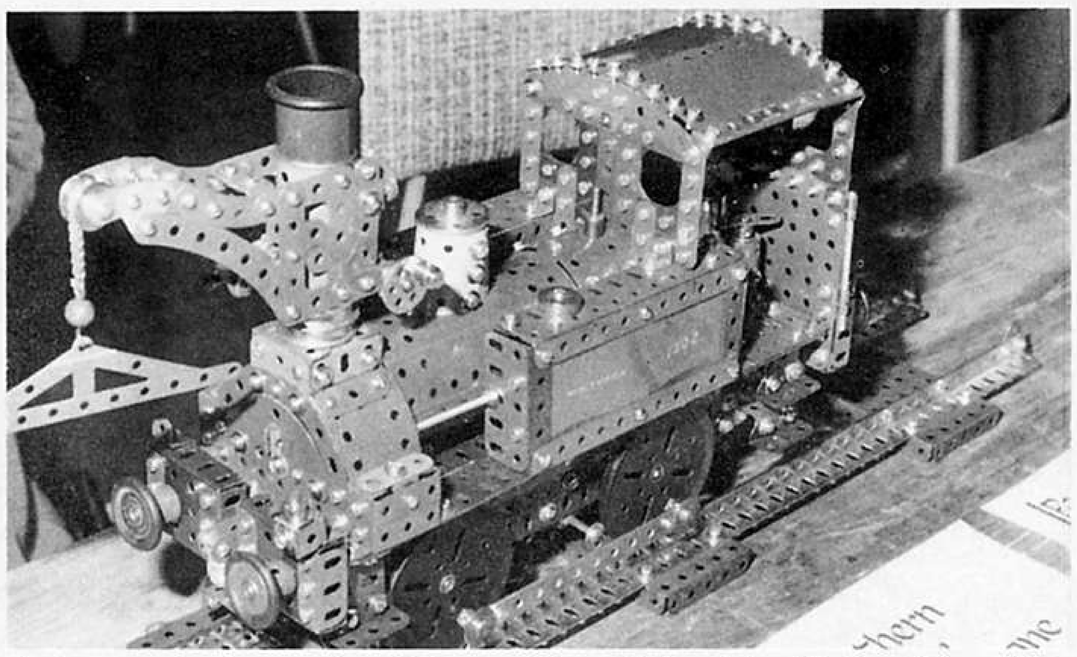


Below: Terry Pope is seen here with his large-scale 'Rocket' Locomotive, powered by an EU 1072 motor.

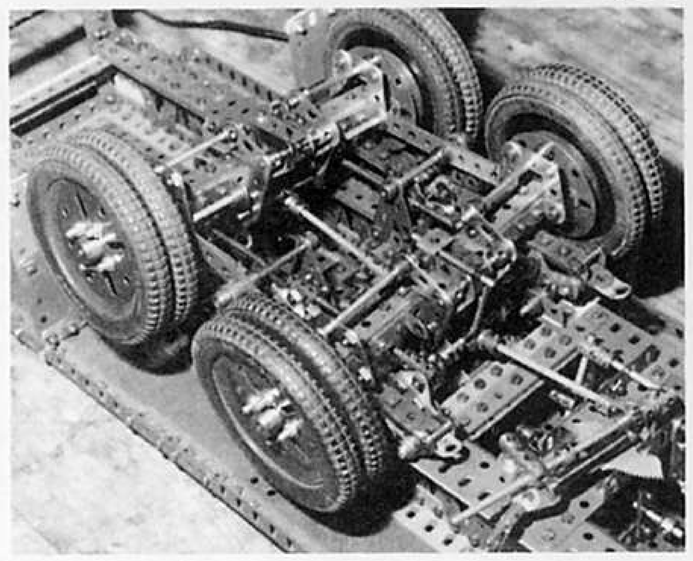


A Look at Leyland

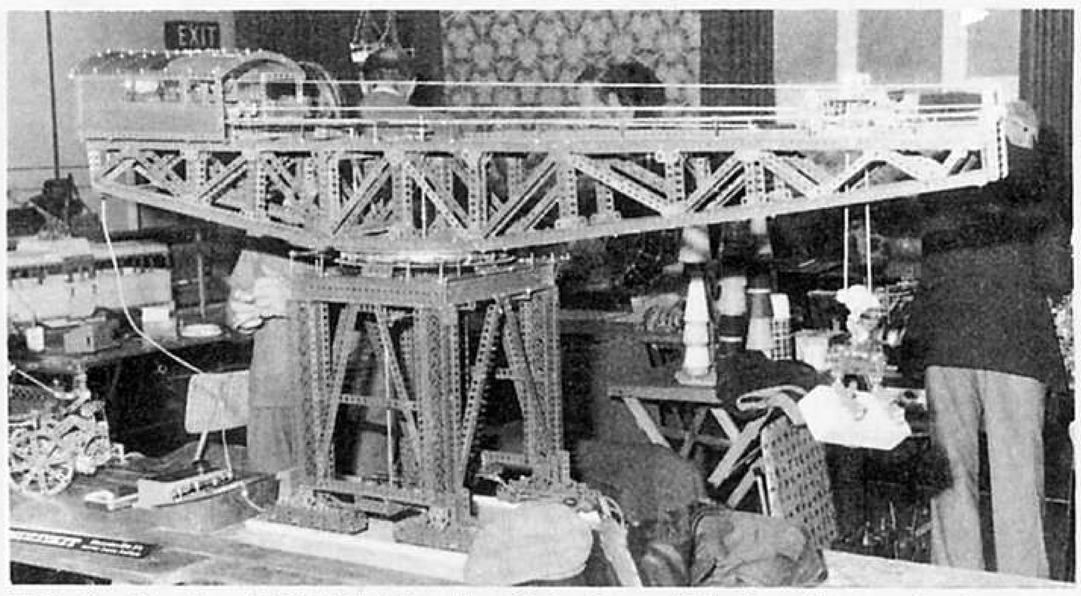
Or rather, a look at some of the large number of excellent models displayed at the North West Meccano Guild's 6th Annual Exhibition on June 7th 1980 at the Civic Hall, Leyland, Lancashire.



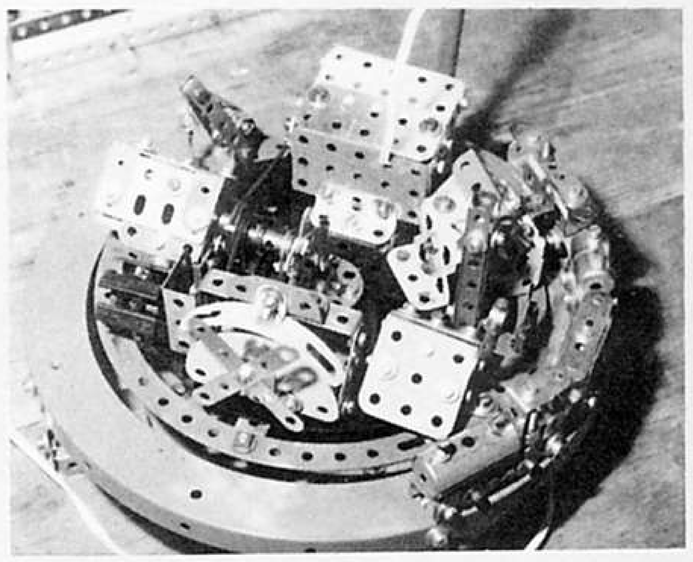
A Crane and a Locomotive all in one, this model by John Martin of New Mills, Cheshire, provided double interest for Meccano modellers. Based on a Southern 1302 Locomotive, John's version used a number of original modelling ideas to advantage.



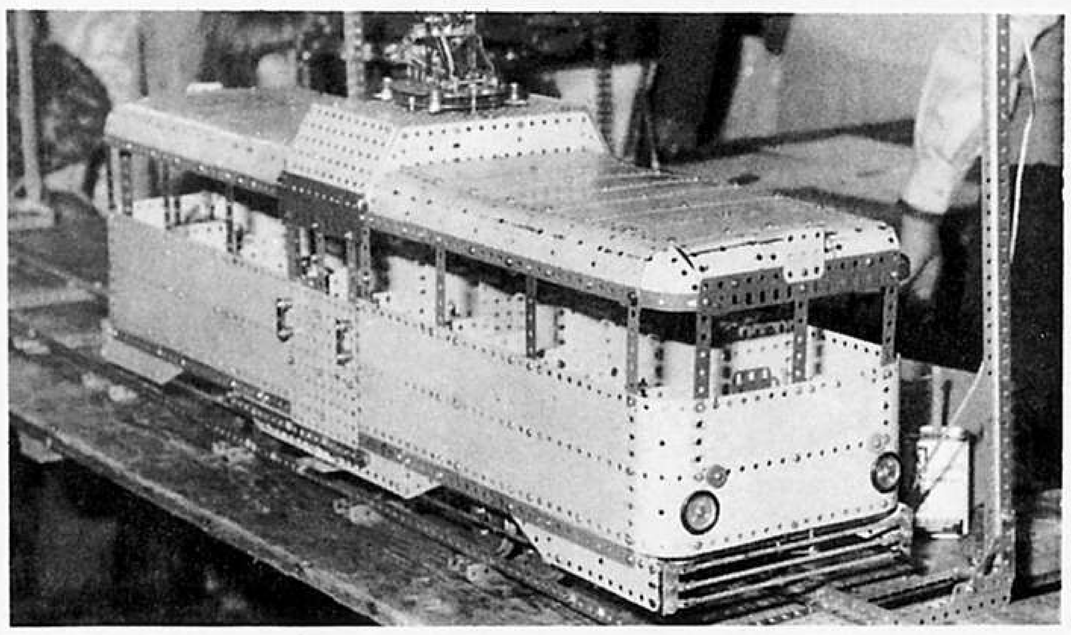
The underside of Alf Dean's 281G Trailer showing its Hobo axle unit, full authentically rated leaf springing and brakes.



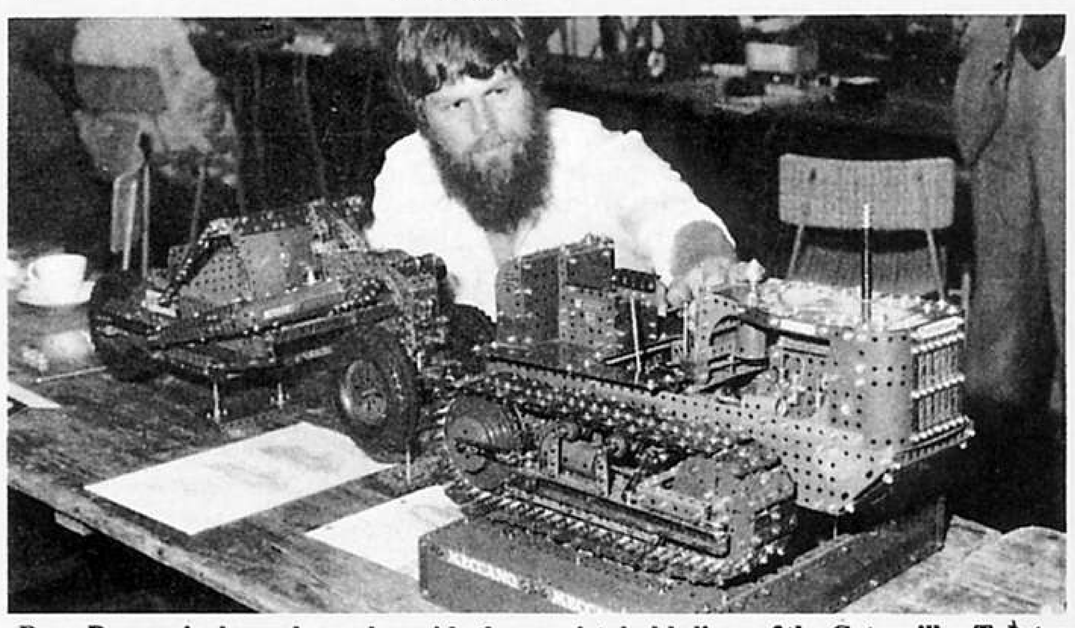
SML 4 with a boost! Modelled by Alan Grimshaw of Yeadon, this version boasts a taller gantry than usual but otherwise adheres to the leaflet specification.



Could this be the smallest Train Set ever? Mounted completely on a Flanged Ring, a village consisting of a house, church, factory, water mill and railway station with crane, all contained within the 'track' of a constantly revolving miniature railway engine with carriage and goods trucks! By Roger LeRolland of Stoke-on-Trent.

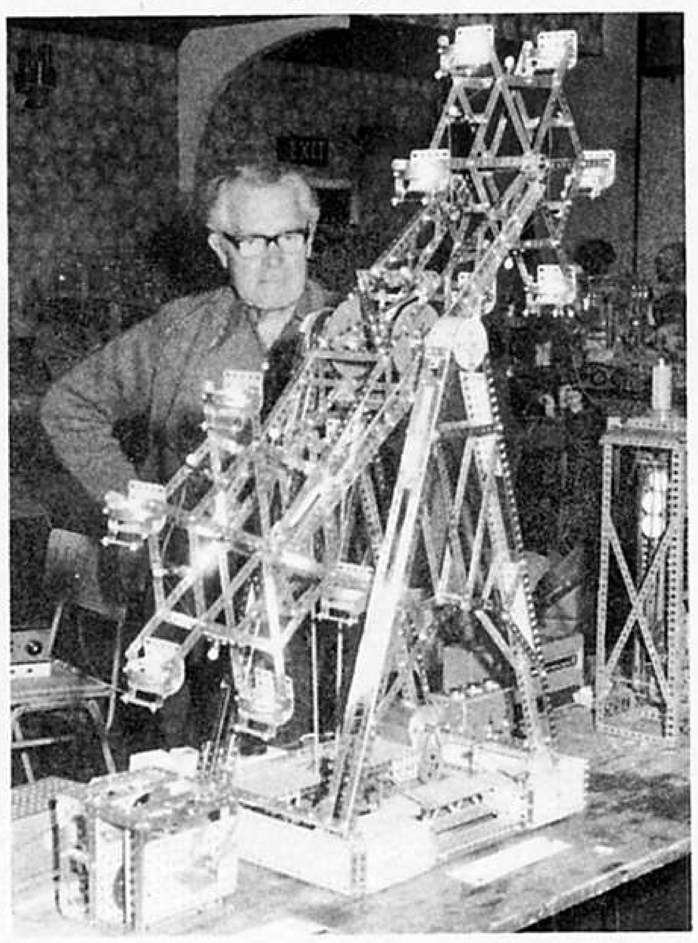


Rochdale Meccano enthusiast George Barratt displayed this fully remote-controlled Tramcar with operating pantograph and opening doors, among its many features.

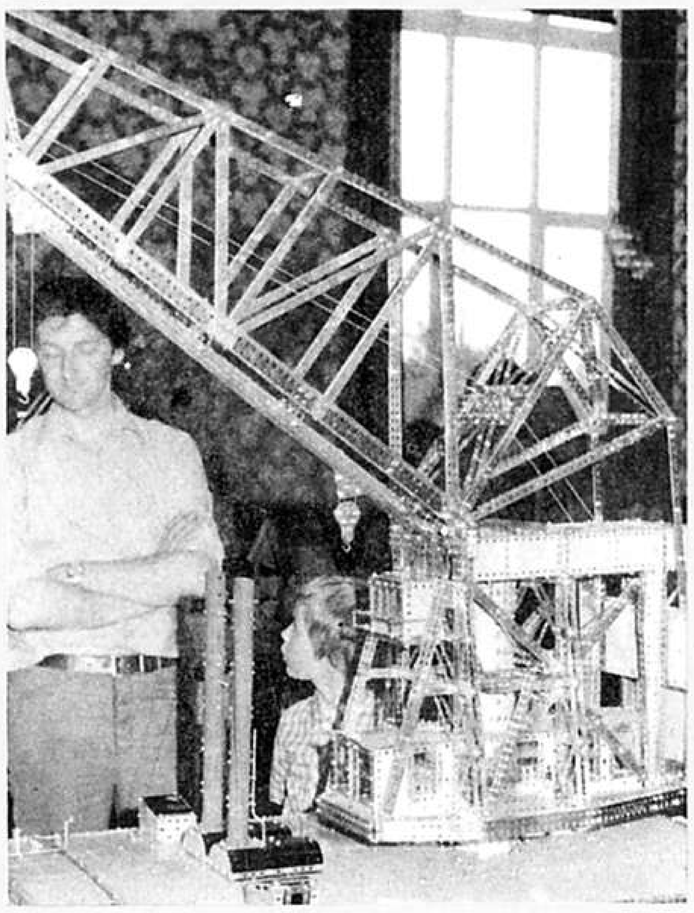


Dave Penney is shown here alongside the unmistakable lines of the Caterpillar Tractor designed by Master Constructor the Late Eric Taylor. This model is seen with an Earth Scraper of Dave's own design.

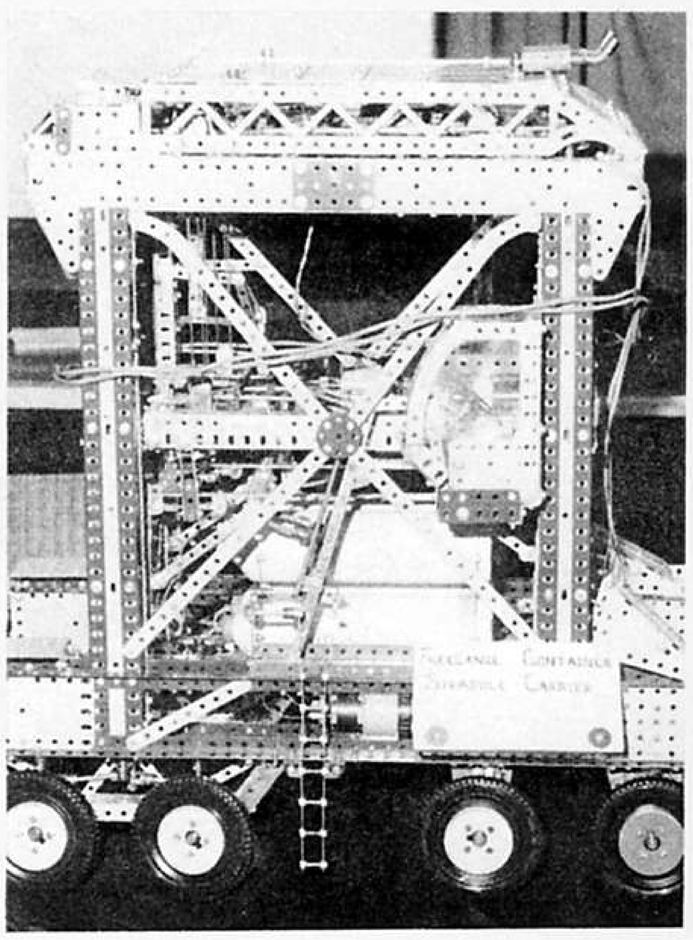
Below; Bert Shaw, Chairman of the North Midlands Meccano Group, with his version of Phil Ashworth's Rotawheels, an exciting fairground ride.



Below: Chris Taylor of Ormskirk with his huge Pontoon Crane which was the subject of a visit by the Crane's designers during the show — they were most impressed!



Below: A freelance Container Straddle Carrier by John Anstey of Clayton-le-Woods, Leyland. It is one of John's first models.



MECCANO

and the History of Aviation

The First World War–1914 to 1918

By Brian Williams Photographs by David Grace

PART 4A

IN the years before the First World War, the conduct of warfare was still shackled by rigid conventions, and few high commands saw the aeroplane as a new factor in war. In fact, during the war and for many years afterwards, aircraft were regarded as ancillary weapons, and were considered to be of value only in direct support of naval or military operations. As mentioned in Part 3 of this series, Italy had been first to use military aeronautics, in 1911, and other countries slowly began to form air forces. The U.S. Signal Corps formed an Aeronautical Division in 1907, and in Britain the Royal Flying Corps was formed in 1912. A Central Flying School was set up; the chief instructor was Major Hugh Trenchard of the Royal Scots Fusiliers, who was later to have great influence on British military aviation and to become commander of the R.F.C. in France and 'Father of the Royal Air Force'.

But the air forces of all countries involved in the War were new and untried, and only the vaguest ideas were held of the uses to which aircraft might be put. In the early stages of the war, aircraft were found most suitable for reconnaissance, and this became their primary task. It should be remembered that the first heavier-than-air craft had flown only eleven years previously, and that although the fledgling aircraft of 1914 showed remarkable improvement on those of 1903, the art of flying was still in its infancy.

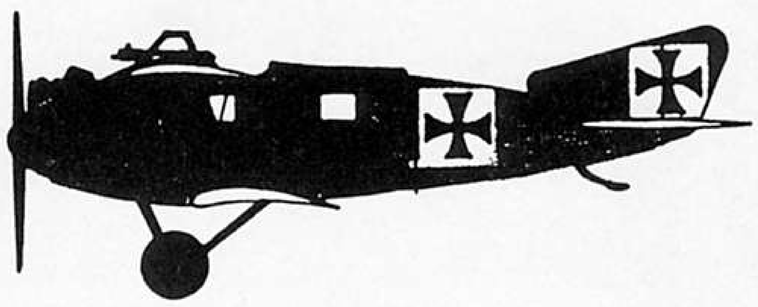


Fig. 1
LFG ROLAND C.11

RECONNAISSANCE

One result of the lack of forethought by high commands with regard to aviation was that the aircraft available to the combatant powers at the outbreak of war were unsuitable for tasks other than unarmed reconnaissance, due to their poor performance and limited load capability. Yet it was clear that if it was worthwhile to send out aircraft to gather information about the enemy, it was equally worthwhile to prevent similar information being gathered by the opposing forces. So the advent of armed conflict in the air was inevitable.

Nevertheless reconnaissance remained the main task of the air forces throughout the war. Although the pilots of the single-seater scouts, the fighter pilots, received far more public acclaim and publicity, it was the airmen who manned the two-seater reconnaissance machines who carried out the more vital task.

In the first months of the war the Germans employed for reconnaissance such machines as the Etrich 'Taube' (Dove) monoplane and the Aviatik and Albatross biplanes. The French aircraft were either lumbering two-seaters such as the Voisin (model, figure 7), or light, agile machines such as the Morane—Saulnier. The latter were equipped with the light and compact rotary engines developed by Laurent Seguin. The aircraft flown by the RFC were probably the most mixed assortment of any of the combatant countries, consisting chiefly of Farman and Bleriot types, and B.E.2's from the Royal Aircraft Factory.

The best British design in 1914 was the B.E. 2, described in Part 3 of this series; and although a good aeroplane, it was totally inadequate as a fighting machine. It was not the only aircraft of the period to have the observer placed in the front cockpit, surrounded by struts and wires. This was the standard arrangement of most two-seaters until Germany introduced the C-category reconnaissance types in 1915.

Reconnaissance aircraft were at first unarmed, but later some observers began to take revolvers or cavalry carbines with them, and this practice, and the first sporadic and armed encounters in the air, led quickly to organised aerial combat.

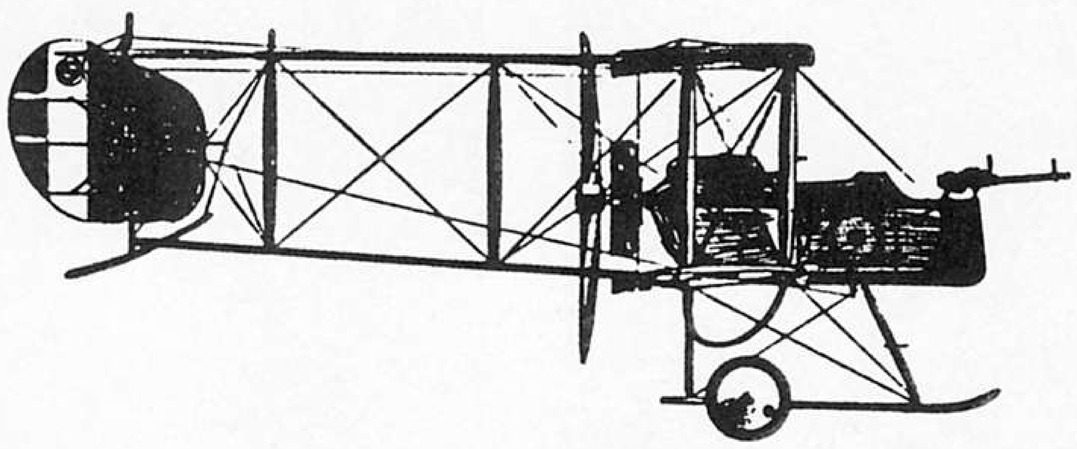


Fig. 2
VICKERS F. B. 5 "GUNBUS"

ARMAMENT AND COMBAT

The French pilot Roland Garros fitted steel deflector plates to the propeller blades of his Morane-Saulnier Type L and with a forward-firing gun achieved considerable success against German aircraft until he was forced down behind the German lines in April 1915. From Garros' simple arrangement, the Dutch designer Anthony Fokker developed a mechanical interrupter gear which prevented the gun firing when the propeller blades were in line with the muzzle of the gun. Interrupter gear was fitted to the German Fokker 'Eindekker' monoplane (model, fig. 6) and by the summer of 1915 this type was being employed with great effect against the French and British reconnaissance machines. The 'Eindekker' was a mediocre aeroplane, and owed its success solely to its synchronised machine gun; but with it Germany dominated the skies over the Western Front.

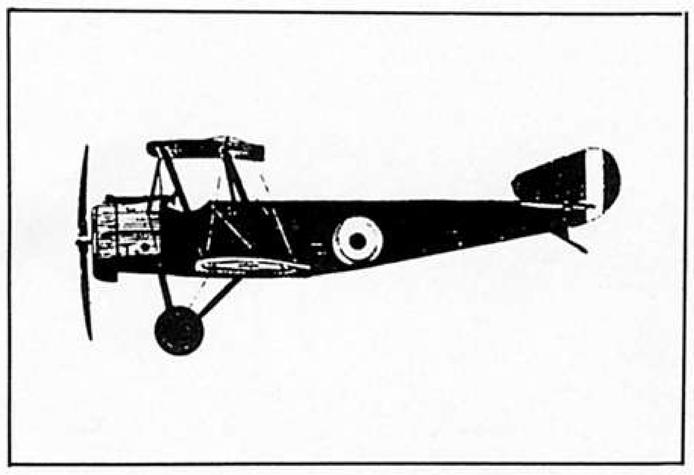


Fig. 3 SOPWITH '1½-STRUTTER'

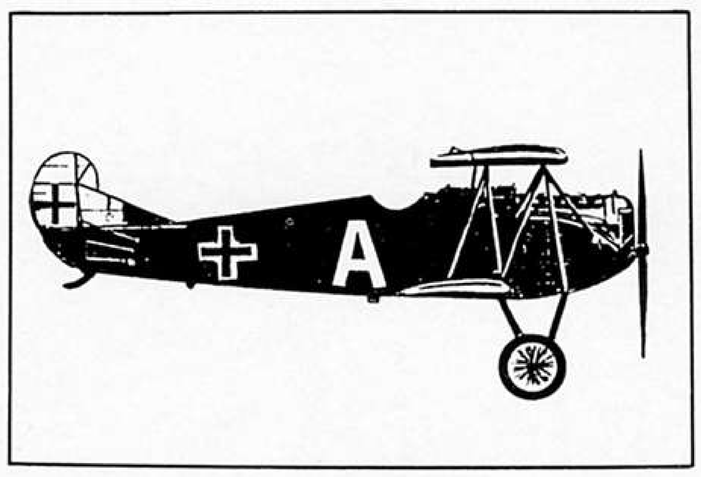


Fig. 4 FOKKER D. VII

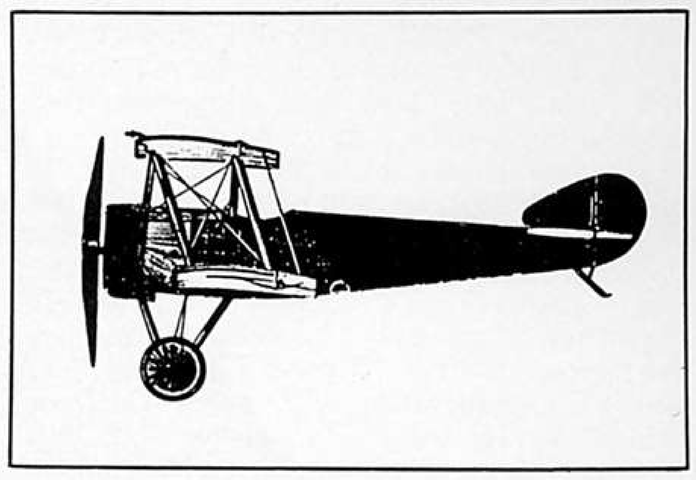


Fig. 5 SOPWITH "PUP"

The Allies' answer to the Eindekker was the introduction of types such as the French Nieuport 11, which carried its gun above the top wing, firing outside the propeller disc; and the British Vickers F.B. 5 'Gunbus' (Figure 2) and de Havilland D.H.2, which were 'pusher' biplanes with the engine and propeller at the rear, giving an unrestricted field of fire forwards. Before long, Allied fighters were equipped with interrupter gears, and air superiority was wrested from the Germans, until the appearance of the Halberstadt and Albatros biplanes early in 1917. Throughout the war, mastery of the air changed from one side to the other as each combatant in turn introduced improved designs.

Both the 'Gunbus' and the D.H.2 were armed with a 0.303" Lewis gun, which was one of the most important aircraft guns of the war due to its light weight and compactness. Another widely-used gun was the 0.303" Vickers, a lightened, air-cooled version of the water-cooled machine gun used by the British Army. The guns most widely used by the Central Powers were the Parabellum and the Spandau, both of 7.92 mm calibre.

The story of aerial combat really began in January 1916, with the German pilots Oswald Boelcke and Max Immelmann, who implemented the idea of planned tactics in air fighting, instead of the spasmodic unplanned encounters which had previously taken place.

Germany's introduction of the C-category biplanes resulted in the appearance of several excellent designs from 1915 onwards. An example was the Albatros C.I., with the observer placed logically in the rear seat, giving him an improved view and field of fire. During 1916 both the French and British produced improved aircraft to combat Germany's superiority in the air, and as the year progressed, aerial warfare changed from its original basis of personal combat, and became more organised—and more deadly.

ENGINES

During 1914-18 war, considerable advances were made in the field of aero-engines. A large range of engine types were in use, from the French rotary engines such as the Gnome, Le Rhone and Clerget, widely used by Britain and France, to the Mercedes and Daimler-Benz in-line engines and Oberursel rotaries which equipped German aircraft.

The rotary engine, already mentioned in Part 3 of this series, had a number of advantages over the more orthodox type of engine, including light weight, and good power-to-weight ratio; and being air-cooled, did not require the added complication of a water-cooling system. French rotary engines equipped most British single-seater aeroplanes, and an excellent 150 h.p. rotary, the B.R.1, designed by W. O. Bentley, appeared in 1917 and was used in aircraft such as the Sopwith Camel.

An excellent Vee-8 engine, the Hispano-Suiza 200 h.p., was available to the Allies and was used for example in the French SPAD S.VII scout. This engine was made chiefly of aluminium with wet liners and overhead camshaft, and its power-to-weight ratio of about 2.4 lbs per h.p. compared favourably with the 4.0 lbs per h.p. of engines such as the Beardmore and Mercedes. Water-cooled engines were represented by such reliable power units as the Rolls-Royce 'Eagle' Vee-12 of 225 h.p. which powered for example, numbers of Airco D.H. 4s of 1917.

Most German aircraft of the time presented an aerodynamically-clean outline, marred only by clumsy exhaust manifolds, and were powered by conservative but reliable 6-cylinder in-line Benz or Mercedes engines of between 160 and 200 h.p. In many ways one of the most advanced aeroplanes of the period was the LFG Roland C.II (Figure 1) nicknamed 'Walfisch' (Whale) because of its rotund streamlined fuselage.

BOMBING

Bombing operations in World War I, as in later conflicts, fell into two classes: tactical and strategic. Tactical bombing was the logical continuation of battlefield reconnaissance, when it was realised that enemy concentrations and strongpoints presented suitable targets for air attack. Strategic bombing, i.e. bombing on a wider scale, was a later development.

Germany began strategic bombing of Britain, using Zeppelin airships, in 1915, but as fighter defences improved, the vulnerable Zeppelins suffered unacceptable losses; and Germany joined the other major powers in employing heavy bombers. Few strategic raids during the First World War had any significant effect, but such operations paved the way to future developments.

France commenced bombing operations quite early in the war, employing a force of Voisin bombers to attack targets east of the Rhine. The aircraft used were of the type represented by the Meccano model of the Voisin LA 3, which is illustrated in Fig. 7. These slow, lumbering aircraft were used with considerable success as they faced little or no opposition from enemy machines.

Bombing raids were also carried out by aircraft of the Royal Naval Air Service on Zeppelin sheds at Cuxhaven and the airship works at Friedrichshafen. The R.N.A.S. was the service that later ordered the first British heavy bomber, the Handley-Page 0/100, which entered service in late 1916. The 0/100 was powered by two Rolls-Royce engines of 250 h.p.—it had a range of 700 miles, and could carry up to 2,000 lbs of bombs. It was succeeded in mid-1918 by the 0/400, of greater power and improved performance. Throughout the war the R.N.A.S. also provided fighter squadrons on the Western Front, and others for the air defence of the U.K.

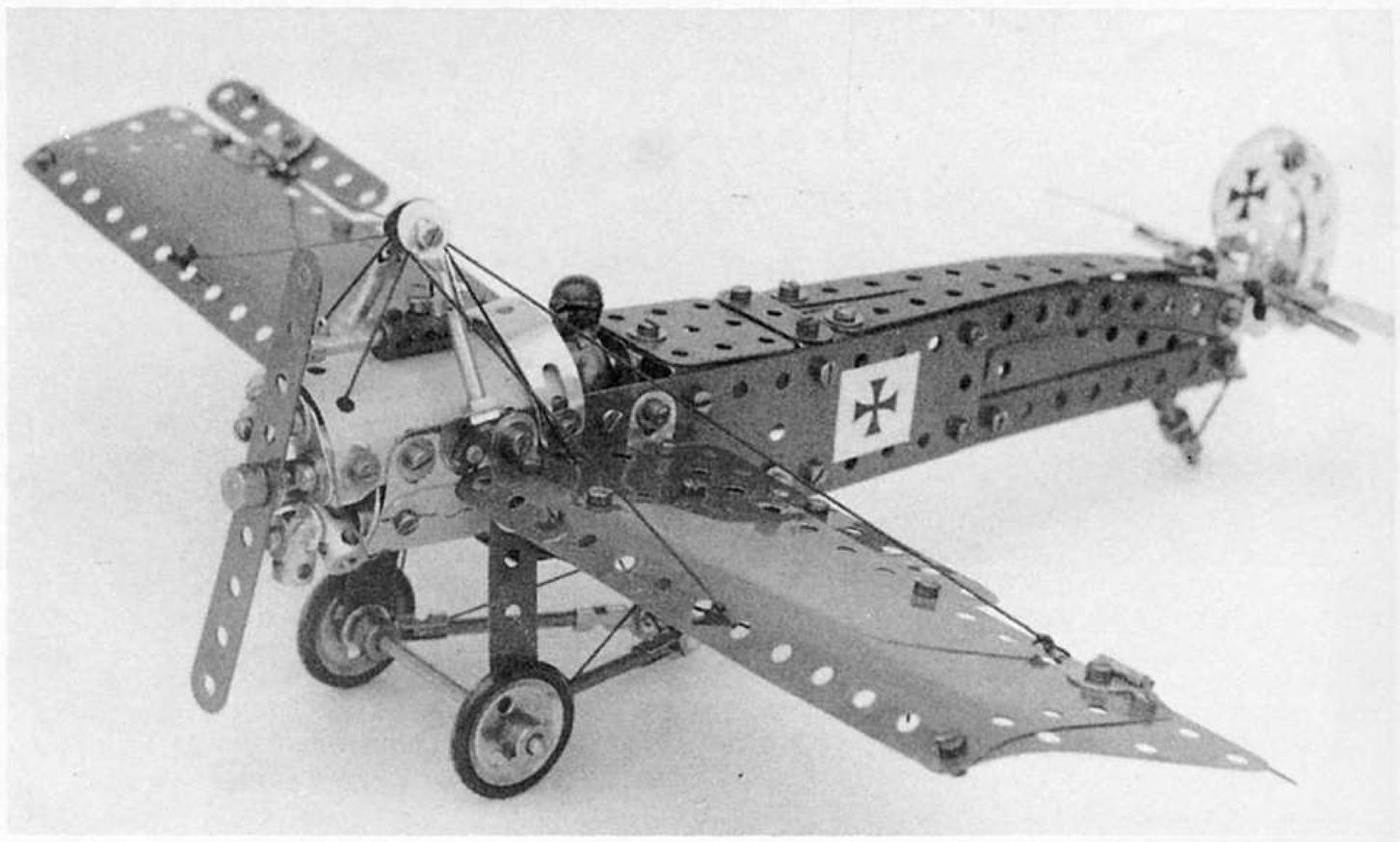
Purely tactical bombing was carried out by single-engined aircraft such as the Sopwith 1½-Strutter (Fig. 3), a very successful design which entered service in 1916 and which was also used as a fighter and for reconnaissance. The 1½-Strutter was succeeded in 1917 by the D.H.4, arguably the best single-engined bomber of the war. Designed by Geoffrey de Havilland, the D.H.4 was fast and sturdy: it was powered by a Rolls-Royce Eagle VII engine which gave it a speed of 143 m.p.h., which was more than most fighters could achieve, even up to the end of the war.

Another formidable aircraft of this type was the French Breguet 14 which could carry up to four machine guns and 520 lbs of bombs. The Germans employed their general-purpose aircraft for the tactical bombing role, for example the Albatros C.VII and the Hannover CL.II.

THE FIGHTING SCOUTS

As mentioned earlier, aerial combat began in earnest in 1916, with the planned tactics introduced by Boelcke and Immelmann, and with it grew the need for fighting aircraft with improved performance and manoeuverability. The air war, so different from the misery of trench warfare, wrongly acquired a romantic aura, and this was especially marked in the fame achieved by the figher 'aces', a name and system originated by the French. One of the earliest of the aces was the French pilot Roland Garros, who earned the title in 1915, and from then until the end of the war many brave and skilled pilots of both sides gained the title of

Figure 6: Model of the Fokker 'Eindekker' of 1915. The pilot is the same Aeroplane Constructor Pilot who represented Louis Bleriot in the model featured in Part 3 of the series. Merely a change of nationality!



'ace'. Names which became well-known in this way included, amongst many others, Boelcke, von Richthofen, Guynemer, Nungesser, Ball, Bishop, McCudden, and Rickenbacker.

The year 1916 saw the introduction of aircraft greatly superior to those previously in use. Faster and more formidable fighters included the French Nieuport 17 and SPAD S.VII single-seaters. The Nieuport was so successful that the Germans copied the design, resulting in the famous 'V-strut' Albatros series, the D.III and D.V. Another successful fighter, which was delightful to fly, was the famous Sopwith 'Pup' (Fig. 5), which with its 80 h.p. rotary engine and small dimensions, had excellent manoeuvrability and rate of climb. Two-seater fighters were also introduced, such as the splendid Bristol F.2B of 1917, the 'Brisfit', which could be flown like a single-seater with the added bonus of the observer's flexible gun for self-defence.

THE FINAL YEAR

The year 1917 had been terribly hard for the Allies on the Western Front. Germany had won back air superiority, and had introduced specialised types of aircraft for such roles as ground attack. In early 1918, however, with the advent of the latest types such as the S.E.5a, Sopwith Camel, and SAPD S.XIII fighters, the Allies finally gained domination of the air. Even Germany's new Fokker D.VII (Fig. 4), probably the finest fighter of the whole conflict, appeared on the scene too late to alter the course of events. The U.S.A. had entered the war in April 1917, and for the remainder of the war, the air arm of the American Expeditionary Force, equipped mainly with French aircraft, made an important contribution to the war in the air. In addition, the excellent American 'Liberty' engine was in production, and a huge expansion of the American aircraft industry was taking place.

In April 1918 the R.F.C. ceased to exist and the Royal Air Force came into being as the world's first independent air service, no longer under the control of the Army or the Navy.

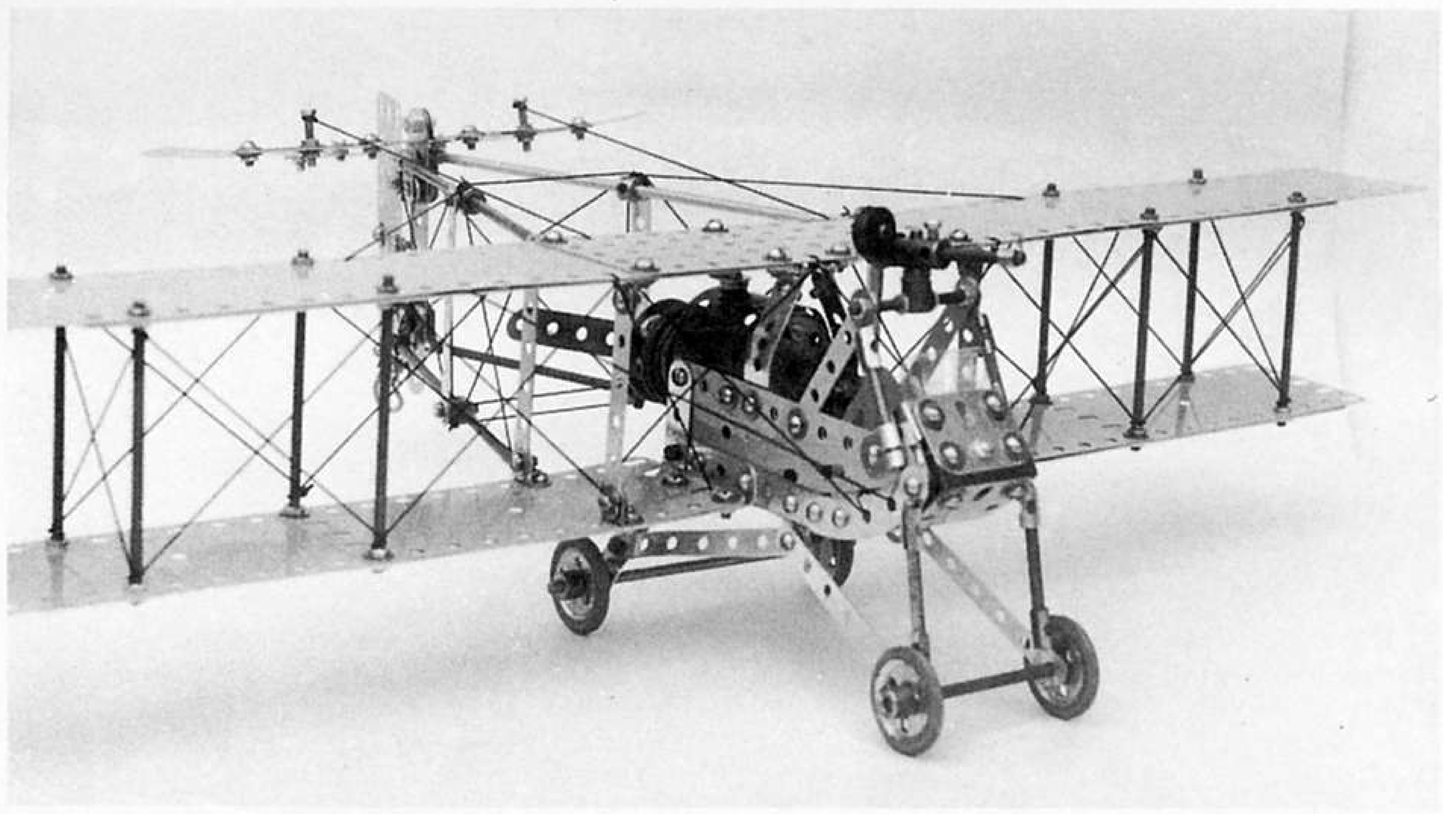


Figure 7: Model of the Voisin LA3 bomber. Details of the Hotchkiss machine gun and its mounting can be seen.

DEVELOPMENT

It has often been stated that aircraft development made great strides during the war of 1914-1918, but this is true only in certain aspects of aircraft design. The last and probably finest fighter of the war was the Fokker D.VII referred to above, capable of 116 mph with an engine of 185 h.p.—yet the streamlined S.E.4 of 1914 had a top speed of 135 mph with less than 160 h.p.

Advances had indeed been made, but they were chiefly in the field of engine design and reliability, which were to make possible the record-breaking flights of the post-war years; and in airframe design, for the aircraft of 1918 were far stronger and aerodynamically superior to the flying machines of 1914.

Flying-boats had also been developed during the war; the large flying-boat first made its appearance in 1914 with the advent of the Curtiss 'America', a later (British) development of which was the famous Felixstowe F.2A, which set the standard for flying-boats for twenty years after the end of the war.

Part 4 will be concluded in the January 1981 Meccano Magazine.

Hints to a Meccanoman's wife

by FRANK BEADLE

SO you are a Meccanoman's wife! An O.B.E. has been handed out for less, but surely you knew before you married him?

Perhaps you did know beforehand, when you were so keen about him during the courting months and you thought you could change him. Well you have not really managed, have you? Before we can suggest any remedies we must first look at the pangs of the trouble, where the first gleaming light of suspicion crept in.

Did you not have any doubts after that wonderful moment in church? Were your suspicions not aroused when the Guard of Honour outside the church held No. 167s above your heads? Perhaps it .was hardly worth taking notice of, after all, one poor soul had No. 38s thrown as confetti!

If you were still too enamoured to think of anything but him, didn't you suspect something when he looked in the Meccano retailer's as you wandered round town on your honeymoon? Perhaps you still thought of nothing but the mere bliss ahead.

It could be he was bitten by the bug since you landed him. Was there not the slightest doubt when he sneaked in one night with a second hand No. 5 Set under his arm, or a few obsolete parts he had picked up at the scrap merchants or second hand shop?

How can we suggest the easing of your burden? One thing we must bear in mind, is that YOU are a very essential part of his Meccano life and you must never forget this.

There are however, certain minor things that you can do; for instance; you could hide all his Flanged Sector Plates, if this won't work you could try more drastic or firm measures. Why not tidy up his Meccano corner or room, or rearrange his storage boxes! This will really upset him. Dusting a half constructed model is far too mild, and may even please him.

You could threaten never to help him dismantle a model, or perhaps you decided on this course of action a long time ago. But the first course is as good as any. Always keep his model room tidy, this will annoy him as he won't be able to find anything. You could go one stage further and mix up all his nuts and bolts, it will take him two days to sort them out!

You must try to get him out of the frame of mind, where he would rather finish a model, than look for you if you were missing from home one night. On the other hand you should not seem annoyed if you find a 2" axle in your slipper, or if the carpet sweeper grinds to a halt with odd nuts, bolts and bits it has picked up on its rounds. Be patient with him, never mind if you cannot get into the garage for freshly painted perforated strips hanging all over the place, but I would certainly draw the line at parts drying off in the oven!

Never under any circumstances threaten to leave him. Many have thought this a good idea, but whilst you are gone he could buy in four or five No. 10 Sets, so on your return you will find yourself very short of room and nowhere to sleep. Also, it would hardly stand up in a divorce court, if you say that you could hardly get into the house for a Level Luffing Crane!

There are much milder measures you can adopt, to bring attention to your plight. Why not throw No. 59s at passers by from your window? This will enable you to vent your spite and could last until you are arrested.

Never bother about tact. Take the shortest and the most direct routes in your countermeasures. Be careful of weekends; Saturday and Sunday are a special danger to the Meccanoman's wife. Once he gets Thursday over, he will begin to look at the weather forecast, to see if he will be at home all weekend due to wet weather. Try to wear him down; tell him he needs a rest after a long week at work. But you have to be careful about this, as you may miss another week in getting those jobs done about the house, he may suggest that a spell of Meccano modelling will help him to relax. He cannot get into the garden on a wet weekend so why bother?

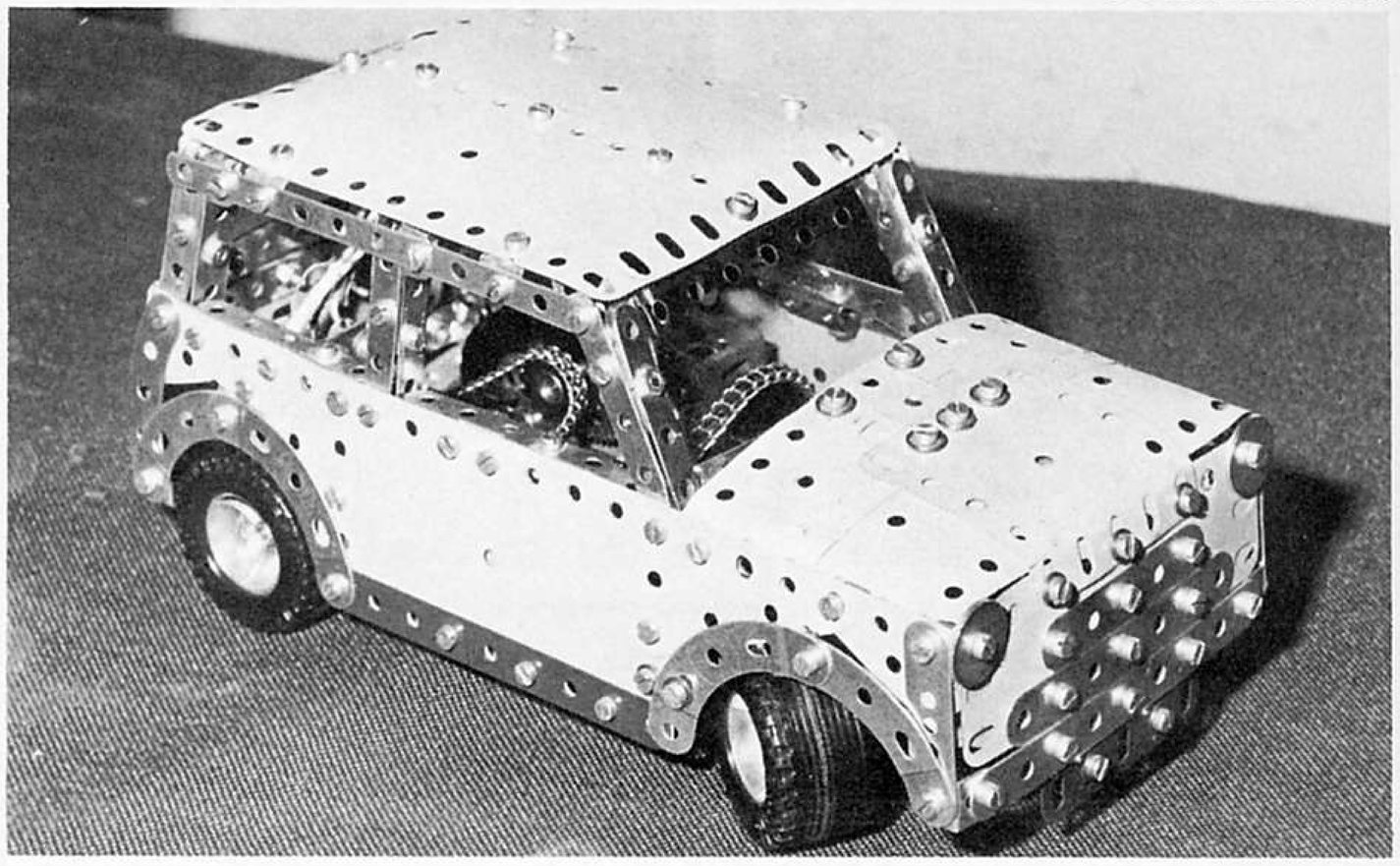
The fact is that your husband is a boy at heart, though you may have trouble finding where his heart is. Never ask him to do anything when both his hands are tied, fastening that final awkward nut and bolt on a large model. Trivial statements like 'The chip pan is on fire', will only serve to upset him when such a delicate task is at hand.

Try to understand him, be conversant with such terms as gears, ratios and meshing. Don't look bewildered when he says he is running short of 'washers'. You may even get your new one if you keep his mind on this line. Ask him how it works, but never under any circumstances touch a model when he is out of the house, Oh no! One poor soul had a life size Robot fall on her whilst dusting. This is a serious thing, it could have damaged the model!

If there is really no way out, you do have one great compensation. He does stay at home to do his hobby and you always know where he is. If he took up fishing or golf to the same extent, you would hardly see him at all.

Yes, taking all in all you are a very lucky woman, as he is hardly out of your sight, and the Christmas present problem doesn't even arise—except for your present of course!

The Alec Issigonis Award Scheme



ABOVE: A Meccano model of a Mini car, featuring full remote-control, 'glazed' windows, realistic bodywork and powerful electric motor drive. By Chris Warrell of the Solent Meccano Club, this picture was taken at the 1979 Henley Meccano Exhibition.

SIR Alec Issigonis, architect of the world-beating Mini car, has lent his name to an important new award scheme for Meccano modellers.

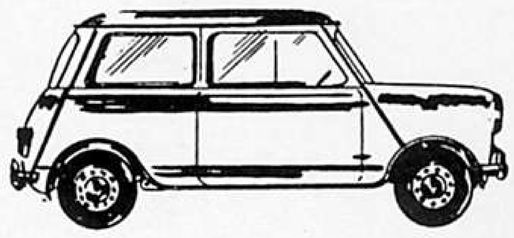
Announced at the Henley Meccano Exhibition on the 30th August 1980, the scheme offers awards in three categories; a Cup for younger modellers 16 and under, a Shield for those over 16 and a Schools Group Entry Shield. Meccano competitions have traditionally attracted a great deal of interest and many fine models as entries, and it is certain that this latest scheme carrying the name of such an accomplished and famous engineer as Sir Alec, will create even more interest than usual.

In the original design work for the Mini in the late 1950's; Sir Alec Issigonis used Meccano parts in the prototypes for the car's gearbox. This underlines the great value of Meccano in the engineering field and it says much for the flexibility of the system that it proved of such great assistance in the final design of this most important component in a revolutionary car. It also says much for Sir Alec's undoubted ability in handling Meccano parts and it is in this Meccano connection that we feel so proud to link his name with the new award scheme.

To enter the competition for the award.corresponding to your age group, it is necessary to submit up to six photographs of a model you have made and a description of the item in not more than 200 words. It is hoped that the judging will be undertaken by Michael Rodd, (of TV's 'Tomorrow's World'); the Editor of Meccano Magazine; and Sir Alec Issigonis himself, at the 50th Model Engineer Exhibition at Wembley in January 1981. This Exhibition is organised annually by Model & Allied Publications.

Entry forms and rules for the competition are available from the Alec Issigonis Awards Secretary; Airfix Products Ltd., Haldane Place, Garratt Lane, London SW18 4NB. Please include a stamped, addressed envelope for return of your entry if not selected. Closing date for entries is 1st December 1980, no time to lose! Any type of model is eligible and there are no limits on size, either way! However, it may be helpful to point out to prospective entrants that originality and inventiveness will be high on the judges' list of desired qualities for the award-winning constructions.

As a footnote, readers will be interested to learn that Sir Alec, who now works as Advanced Design Consultant for BL Cars, received from Austin-Morris on the occasion of his retirement from full-time employment . . . a No. 10 Meccano Set!



LEFT: Sir Alec Issigonis with his world-beating Mini, still being manufactured after 21 years of success.

AUTOMATIC REVERSING ELEVATOR

By Dr. Keith Cameron

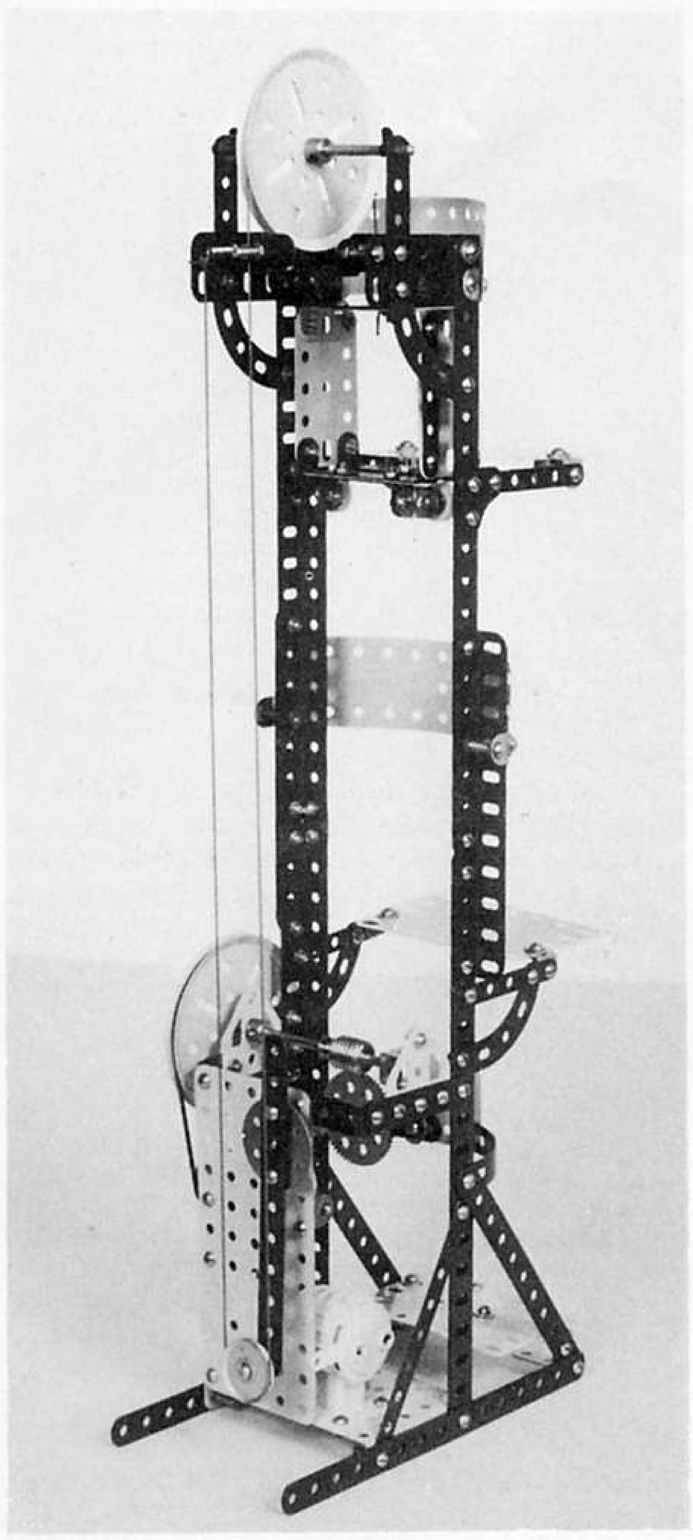
Set 4 Model

THIS 3-floor Elevator stands 22 inches in height and is powered by the 11053 'Crane' motor and battery box supplied with the No. 4 set. The Elevator cage ascends and descends continuously, reversing when its floor is exactly level with the top and bottom floors. The mechanism is based on that described in Super Model Leaflet No. 31, and the model is suitable for demonstration or display. 'Right' and 'left' in the description are used as when viewing the model from the front, ie that aspect with the floors.

THE ELEVATOR GUIDE RAILS. (Figs. 1-4).

The rails are composed of two pairs of 9½" Angle Girders butt-joined and held by a pair of 5½" Angle Girders, the round holes of the latter being against the slotted holes of the former. The slotted hole flanges of the 5½" Angle Girders are directed outwards, and the round hole flanges of the 9½" Angle Girders, (forming the rails for the cage), are directed inward.

FIG. 1: View from the rear, left hand side.



The join betwen the 9½" Angle Girders must provide accurate and straight alignment of the edges, adjacent end round holes of these Girders being connected by carefully placed Fishplates. The Girders are connected at the top by a 3½" x ½" Double Angle Strip 1, the fixing Bolts also passing through the end round holes of two 2½" Flat Girders 2 placed on the inside surface of the 9½" Angle Girders and braced from below by 2½" Stepped Curved Strips, (Fig 4). A Washer is placed on the shank of each fixing Bolt to separate the Flat Girders 2 from the 3½" x ½" Double Angle Strip 1 to provide correct track gauge. 2½" Perforated Strips are also fixed to the 2½" Flat Girders 2 as shown, with 3 holes projecting above.

These 2½" Strips support in their upper holes a 4" Axle Rod carrying a 3" Pulley,

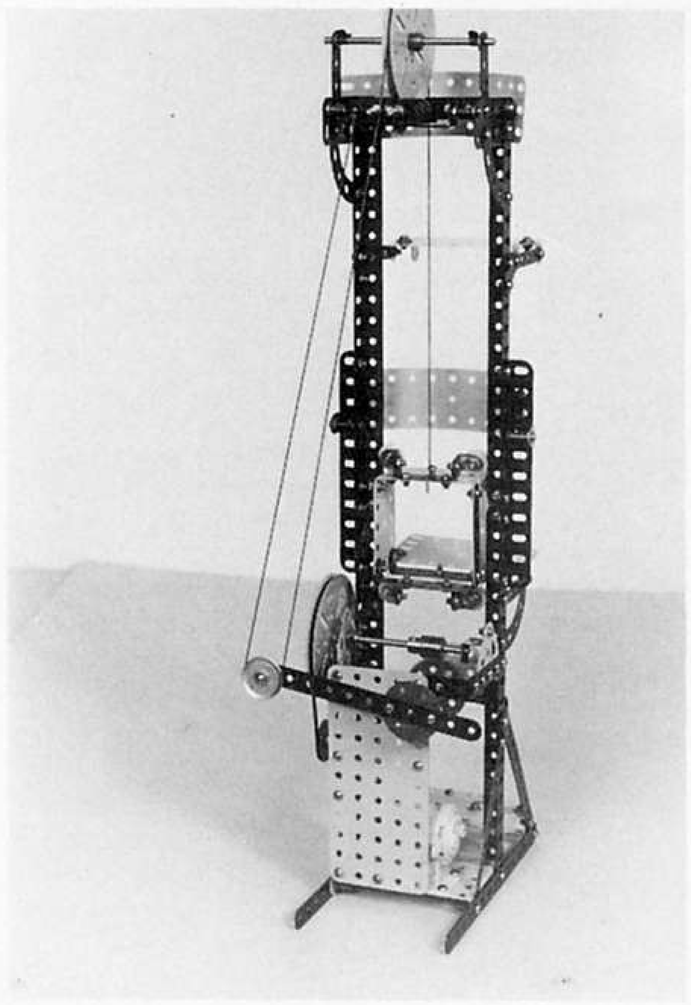


FIG. 2: Rear of Elevator showing pulley arm in raised position.

Spring Clips and Washers. A 2½" x ½" Double Angle Strip 3 is attached by one of its lugs to the centre hole of the 3½" x½" Double Angle Strip 1, and is supported by its next to end hole to the rear by another 2½" x ½" Double Angle Strip 4. This in turn is held by its lugs to which ¾" Bolts are lock-nutted and secured in the rear round holes of the 2½" Flat Girders 2. A 2" Strip 5 has ½" Bolts fixed in the two next-to-centre holes, and is then bolted to the rear lug of the 2½" x ½" Double Angle Strip 3, in a horizontal position with the ½" Bolt shanks to the rear.

THE BASE (figs. 5-7)

This is composed of a 3½" x 2½" Flanged Plate 6, each flange of which is extended by a

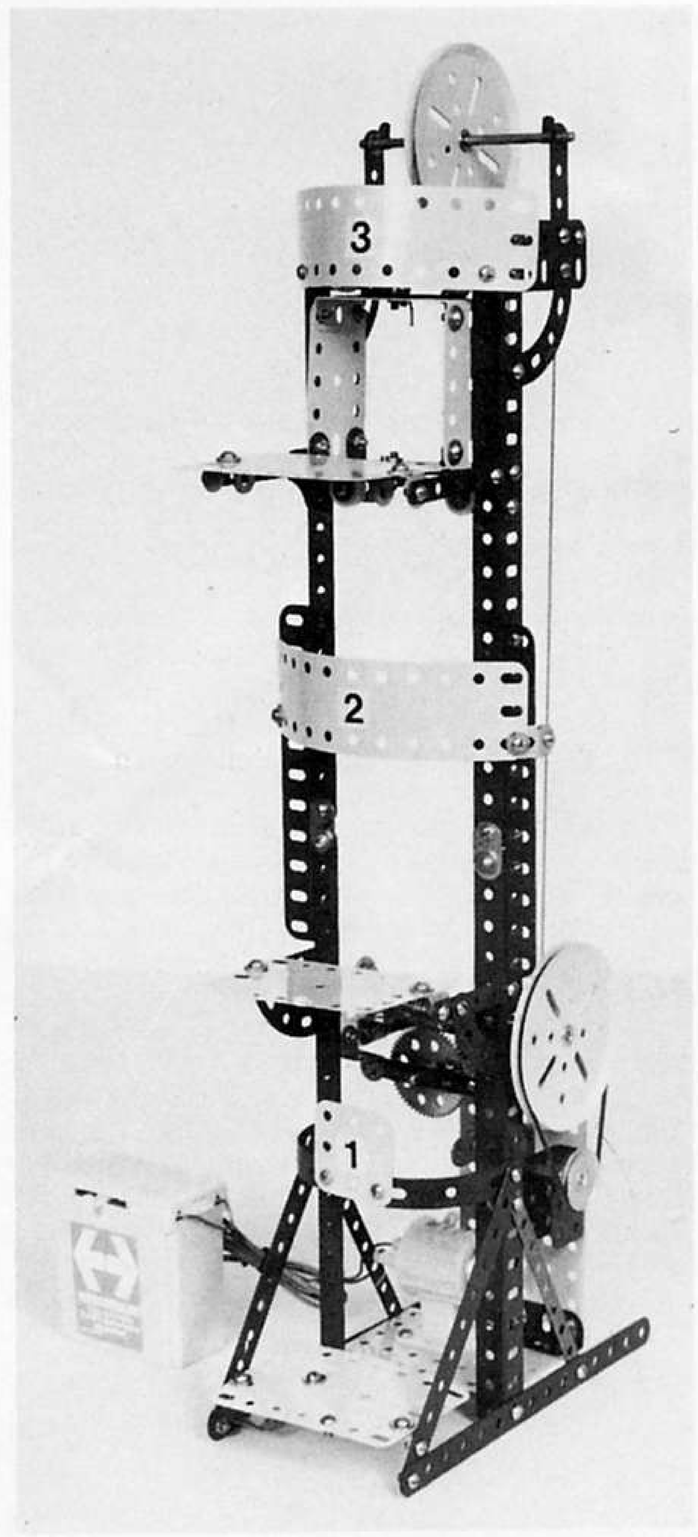


FIG. 3: Front 3/4 view of the Automatic Reversing Elevator by Dr. Keith Cameron.

7½" Strip 7. The Bolts securing the bottom holes of the vertical 9½" Girder elevator guide rails carry Washers on their shanks to space them from the flanges of the 3½" x 2½" Flanged Plate 6. The vertical guide rails are braced by two 5½" Strips and two 4½" Narrow Strips.

THE MECHANISM (figs.5-7)

A vertical 5½" x 2½" Flat Plate 8 is held via a 1½" Angle Girder to the 3½" x 2½" Flanged Plate 6. A 3½" x ½" Double Angle Strip 9 is bolted to the top edge of the 5½" x 2½" Plate 8 and is affixed via its lugs to the vertical 9½" Angle Girders by two 2½" Strips 10. Flat Trunnions are bolted to the inner surfaces of the Strips 10, and the forward Bolts secure RH and LH Corner Angle Brackets by their round holes. The slotted holes of the Corner Angle Brackets are directed down, to the rear, and support a 3½" Narrow Strip 11 by its end holes.

A Double Bent Strip is affixed to the upper and lower holes of the left hand Flat Trunnion, facing inward. A Channel Bearing is bolted to the 5½" x 2½" Flat Plate 8 at its right hand edge, spaced from the Plate by a Washer on the shank of each fixing Bolt. A Fishplate is fixed by its slotted hole to the round hole of a 1" x ½" Angle Bracket 12, which is then bolted by its short lug to the Flat Plate 8. These parts are adjusted to enable free rotation of a 2½" Axle Rod journalled as shown in the 1" x ½" Angle Bracket and the Channel Bearing. This 2½" Axle Rod carries a 1½" Pulley driven by a 6" Driving Band from the output shaft of the 11053 motor, which is bolted to the 3½" x 2½" Flanged Plate 6.

The 1½" Pulley is spaced from the Channel Bearing by three Washers. A 1" Pulley on the 2½" Axle Rod outside the Channel Bearing, drives by means of a 10" Driving Band, a 3" Pulley on a 3½" Axle Rod journalled in the RH Flat Trunnion and the Double Bent Strip. This 3½" Rod also carries a Collar on the inner surface of the Flat Trunnion, and a Worm Gear

that engages with a 57t Gear mounted on a 2½" Rod 13, journalled in the Flat Plate 8 and the 3½" Narrow Strip 11. To the rear of the Flat Plate 8, the 2½" Rod 13 supports a Bush Wheel to which is bolted a 5½" Strip 14 by its 3rd and 5th holes, its 11th hole carrying a 1" Pulley on a ¾" Bolt lock-nutted to the Strip. Check the assembled mechanism for easy running and lightly oil.

THE ELEVATOR CAGE (fig. 8)

A 2½" x 1½" Flanged Plate forms the roof and the sides are composed of 2½" x 1½" Plastic Flexible Plates reinforced in each case by a 2½" Narrow Strip along the rear edge. The cage floor is another 2½" x 1½" Plastic Flexible Plate and this is held by two 2½" x ½" Double Angle Strips as shown. 1½" x ½" Double Angle Strips 15 are bolted to the rear row of holes on cage roof and floor, and to the lugs of these, ½" x ½" Angle Brackets, their slotted holes carrying ½" Pulleys on lock-nutted ½" Bolts, are affixed.

The ½" Bolts carrying the ½" Pulley guide wheels must be spaced as far from the cage as possible, and the Angle Brackets carefully adjusted to allow the Pulleys to rotate freely. The assembled cage is then inserted in the framework of the model by temporarily loosening one Bolt holding the top 3½" x ½" Double Angle Strip 1, and opening out the structure enough to permit insertion of the cage. Replace the Bolt and check for free running of the cage guide wheels against the vertical 9½" Girders. Oil lightly for smooth running.

OPERATION.

Knot one end of a four foot length of Cord to the right hand end hole of the 2" Strip 5. Pass the Cord down and around the 1" Pulley on the 5½" Strip 14 from right to left, then up, between the ½" Bolts and over the top 3" Pulley to be affixed to the centre hole of the cage roof. This can most easily be done by holding the Cord to the rear of the hole while a Bolt is screwed into it.

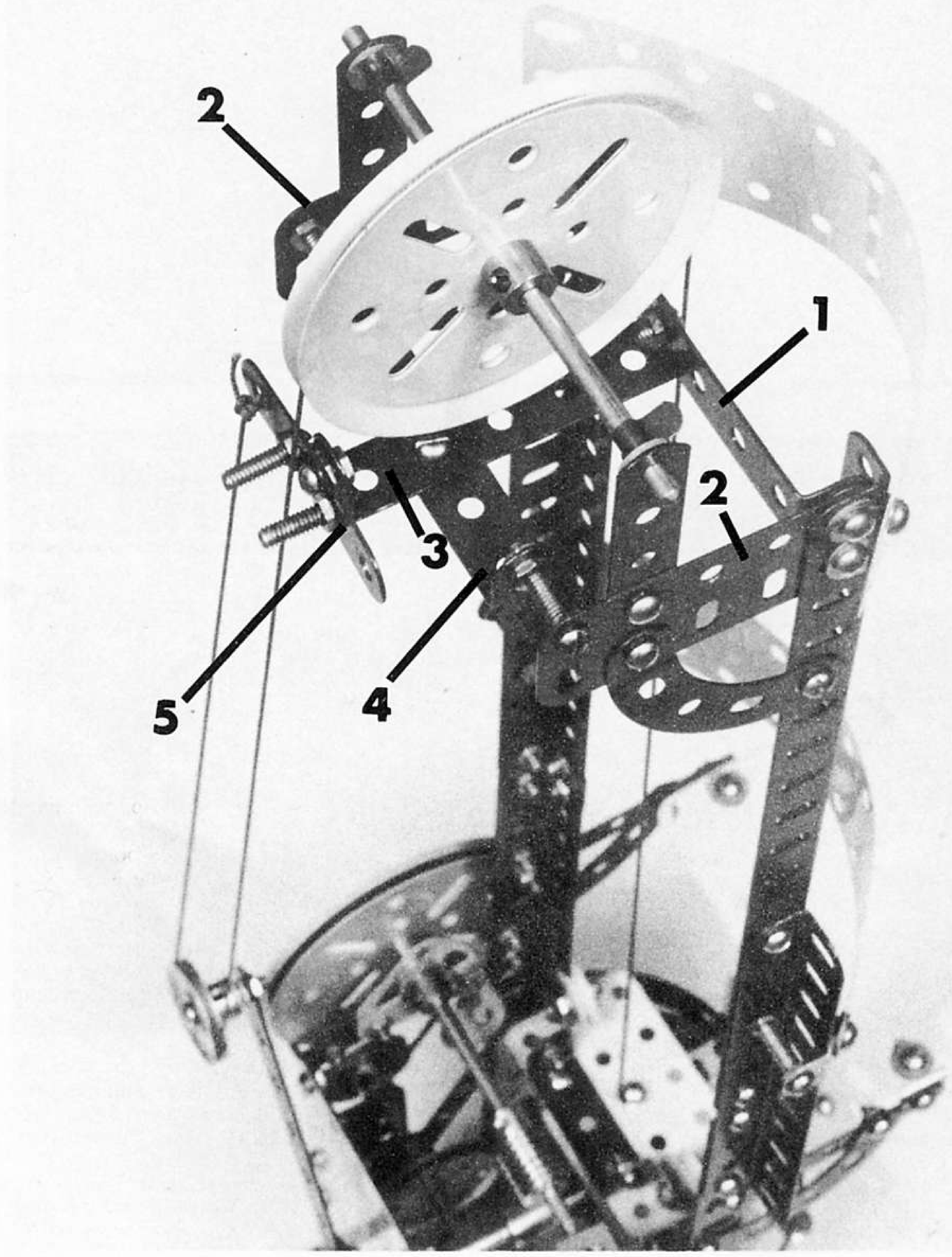
With the 1" Pulley on Strip 14 in its lowest position, arrange the Cord so that the cage is as high as it will go. The battery box provides adequate power for operation if the motor reversing switch is set so that the 5½" Strip 14, (Pulley arm) rotates anti-clockwise as viewed from the front.

THE FLOORS.

Three 3½" x 2½" Plates, (one of which is a compound Plate consisting of two 2½" x 2½" Plastic Flexible Plates), are supported as shown. The ground floor Plate is held by a 1" x ½" Double Bracket and a 1" x ½" Angle Bracket. The second floor is attached by ½" x ½" Angle Brackets to 2½" Narrow Strips 16 braced by 2½" Stepped Curved Strips. The third floor is supported by 3" Narrow Strips secured to the frame and braced by 1" Corner Brackets. ½" x ½" Angle Brackets hold the floor Plate here.

FASCIAS are added above each door opening. Those of the second and third floors are 5½" x 1½" Flexible Plates held by Obtuse Angle Brackets—the Brackets are lock-nutted on ¾" Bolts in the case of the third floor. The first, (ground) floor fascia is a 1½" x 1½" Flat Plate held by two 3" Formed Slotted Strips attached to the framework. Numbers from the supplied transfers sheet can be employed to identify the floors, thus completing the Elevator.

FIG. 4: Top of Elevator showing arrangement of cords.



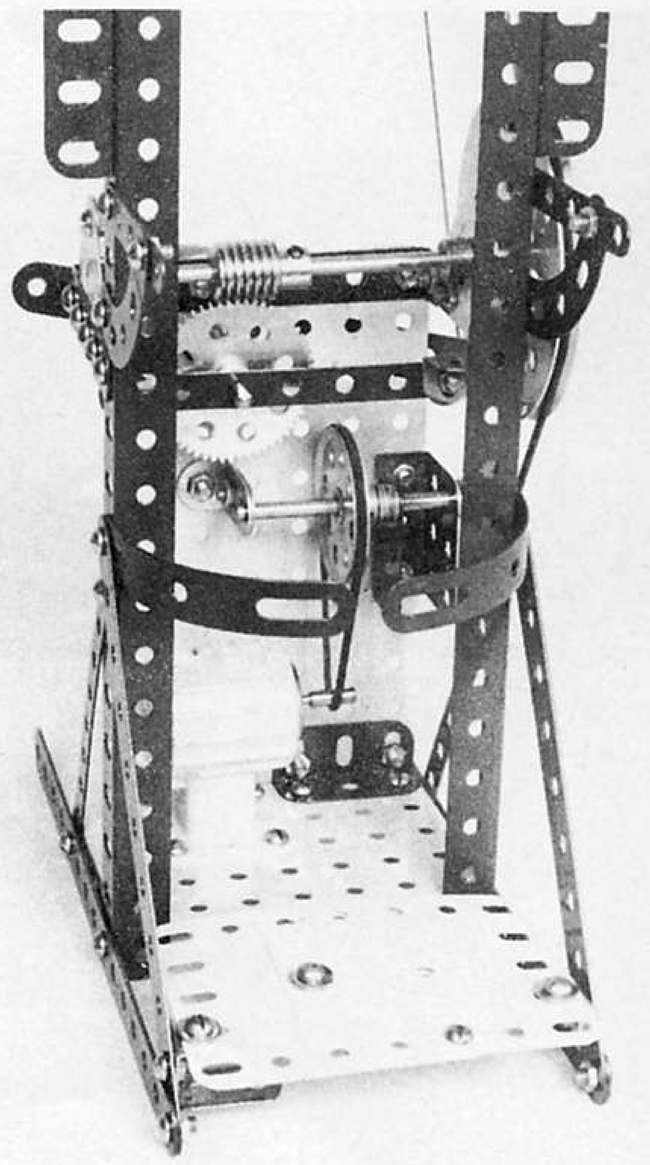
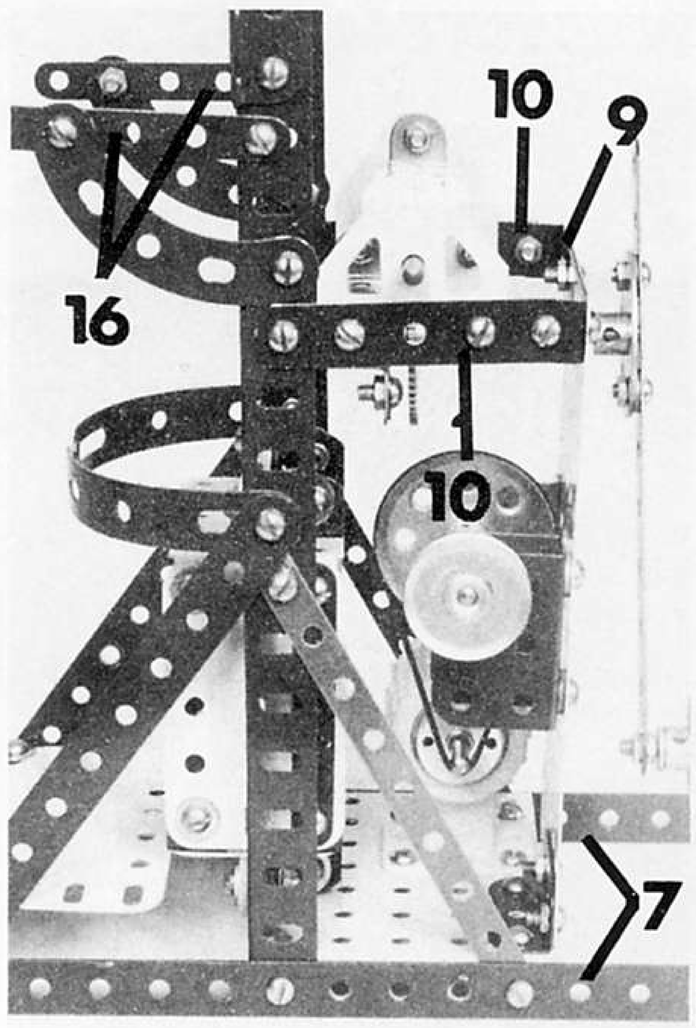


FIG. 5: Mechanism from front with ground floor fascia removed.

FIG. 6: The mechanism as seen from the right, after removal of the lower 3" Pulley.



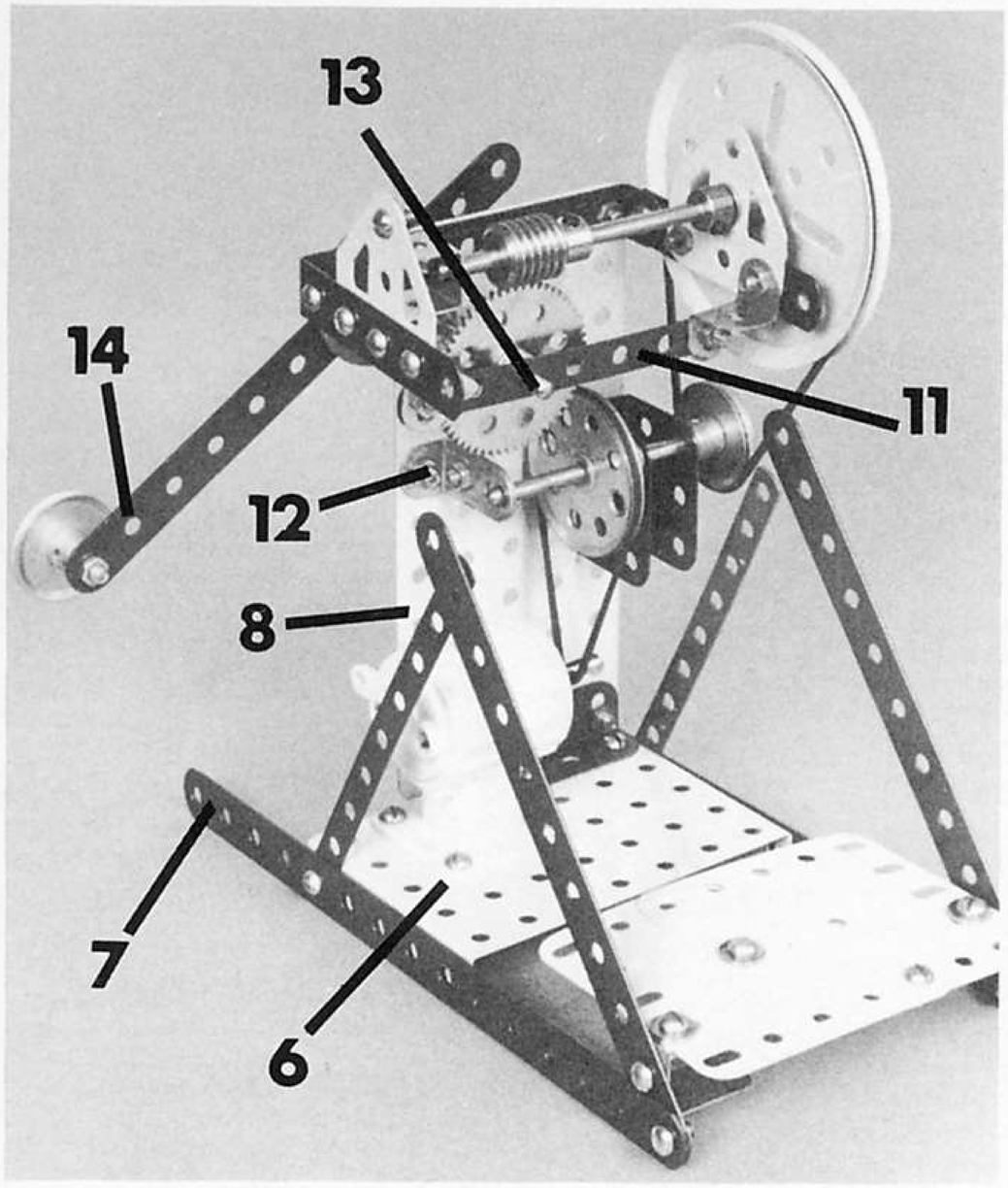


FIG. 7: Elevator mechanism completely removed from model.

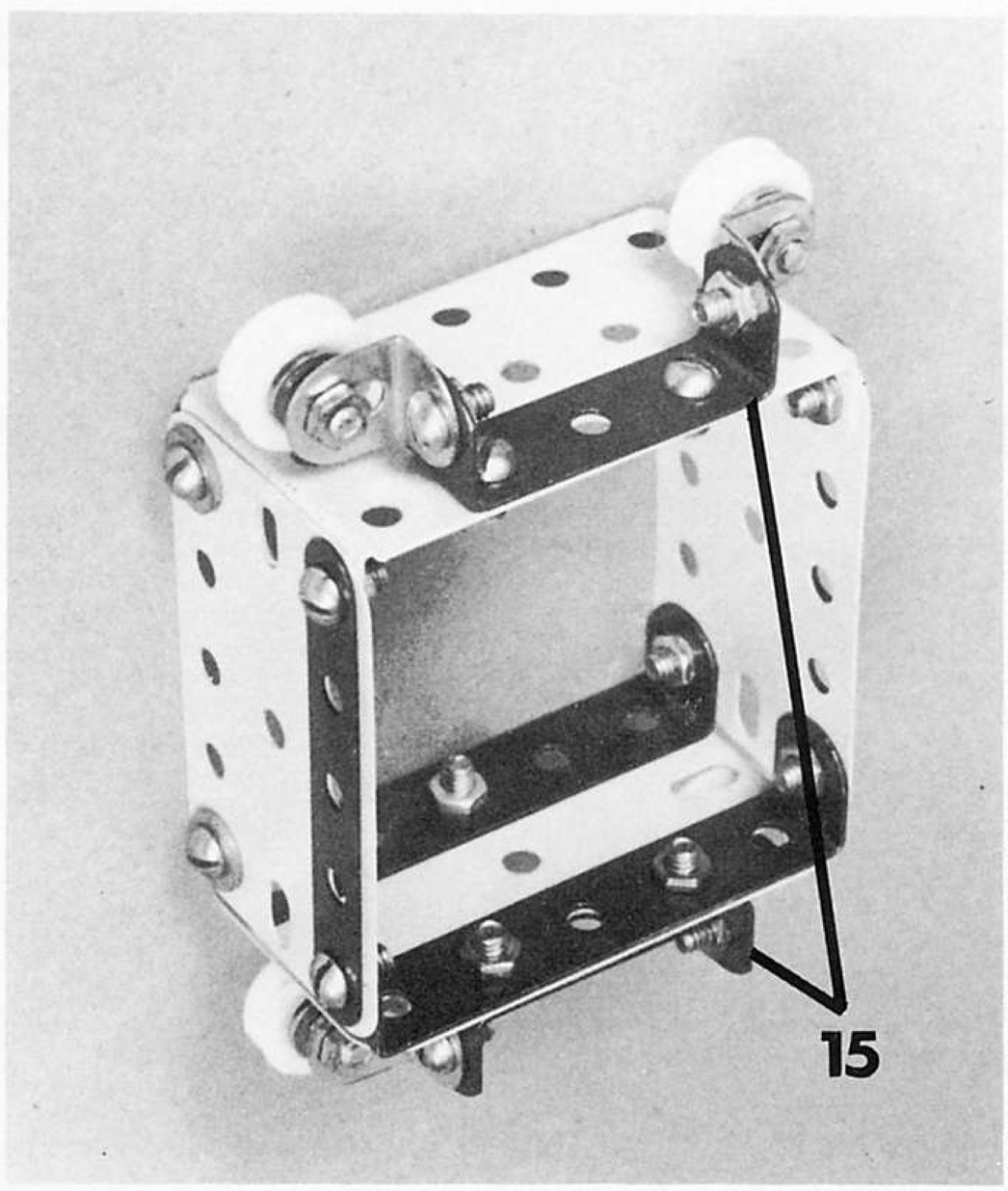


FIG. 8: The Elevator cage as viewed from above, rear.

PARTS REQUIRED

2	of	No.	1B	2	of	No.	12B	110	of	No.	37B
3	of	No.	2	4	of	No.	12C	144	of	No.	37C
4	of	No.	5	2	of	No.	15B	40	of	No.	38
1	of	No.	6	1	of	No.	16A	1	of	No.	40
4	of	No.	8A	1	of	No.	16B	1	of	No.	45
2	of	No.	9					2	of	No.	48
1	of	No.	9F	2	of	No.	19B	4	of	No.	48A
3	of	No.	10	1	of	No.	21	2	of	No.	48B
2	of	No.	11	2	of	No.	22	1	of	No.	51
1	of	No.	11A	4	of	No.	23				
6	of	No.	12	1	of	No.	24B	1	of	No.	53
				1	of	No.	27A	4	of	No.	59
				1	of	No.	32	1	of	No.	70

1	of	No.	74	2	of	No.	190A				
4	of	No.	90A	3	of	No.	194				
2	of	No.	103F	2	of	No.	194A				
4	of	No.	111	2	of	No.	215				
8	of	No.	111A	4	of	No.	235				
2	of	No.	126A	2	of	No.	235A				
2	of	No.	133A	1	of	No.	235B				
1	of	No.	154A	2	of	No.	235D				
1	of	No.	154B	4	of	No.	611				
1	of	No.	160	1	of	No.	618				
1	of	No.	186A	1	of	No.	11053 MOTOR				
1	of	No.	186B	1	of	No.	13624 BATTERY BOX				
2	of	No.	189								

M?COMPETITION?PAGE

MECCANO® Competition

by Alan Partridge

DESIGN A STEERING GEAR FOR A SPEEDBOAT

WHILE he was on holiday, says Alan, he saw a speedboat steered by a steering wheel like that of a car. He has no idea how it was connected, and would like suggestions from readers.

The boat was propelled by an out-board motor hung over the centre of the stern on a vertical post. It could swing to either side or directly astern, controlled by a tiller or steering arm which pointed horizontally forward 2 feet above water level. The driving position, however, was much further forward, out of reach of the tiller. The driver sat facing forward as in a motor car, but in the mid-line, holding a steering wheel the centre of which was also 2 feet above water level. The steering column ran down at an angle of 30° to the horizontal.

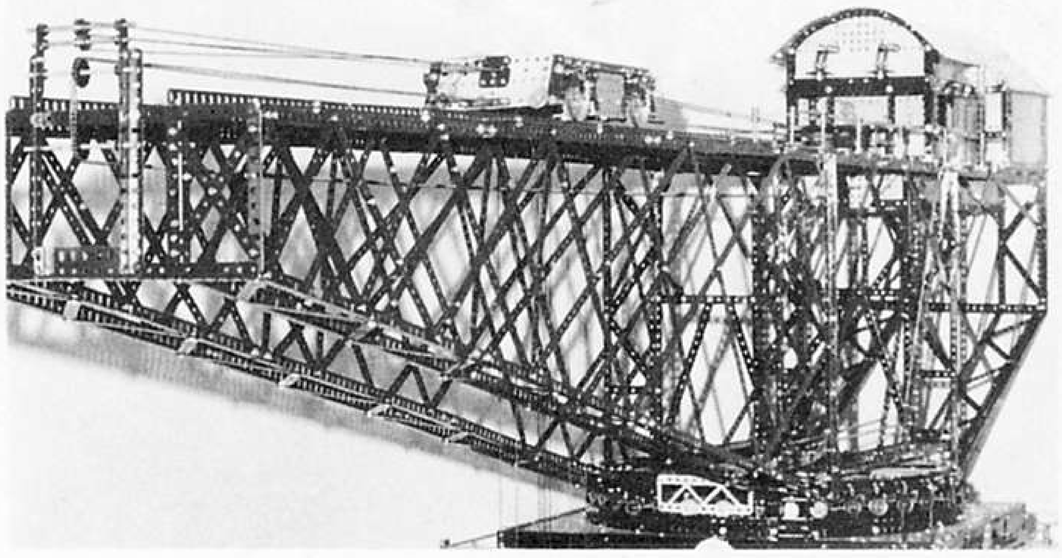
The object of the competition is to design a mechanical connection between the steering column and the free end of the tiller. A few more conditions must be given. The steering column must be an Axle Rod. The tiller can be any convenient combination of Perforated Strips or Angle Girders, or both, with single or double Angle Brackets if required.

There is room in the boat for the connection to pass under the driver or round one or both sides. One complete turn of the steering wheel must move the tiller about 30° away from the mid-line, ie lock to lock, 30° port to 30° starboard, is two turns of the steering wheel. Construction must be with U.K. manufactured metal Meccano parts available within the past ten years, without mutilation. Control must be firm, as far as possible free from play, but not unduly stiff. Credit will be given for simplicity and for soundness of construction.

Actual models must *not* be sent. Send, with your name and address, and age if under 18, description or drawings or both, sufficient for the design to be understood and perhaps rebuilt for testing, to Speedboat Competition, The Editor, Meccano Magazine, Airfix Products Ltd., Haldane Place, Garratt Lane, London SW18 4NB. Entries to arrive not later than January 31st 1981.

AMONG THE MODEL-BUILDERS

with 'Spanner'



The Gantry, twice as big in every dimension as the one described in SML 4.

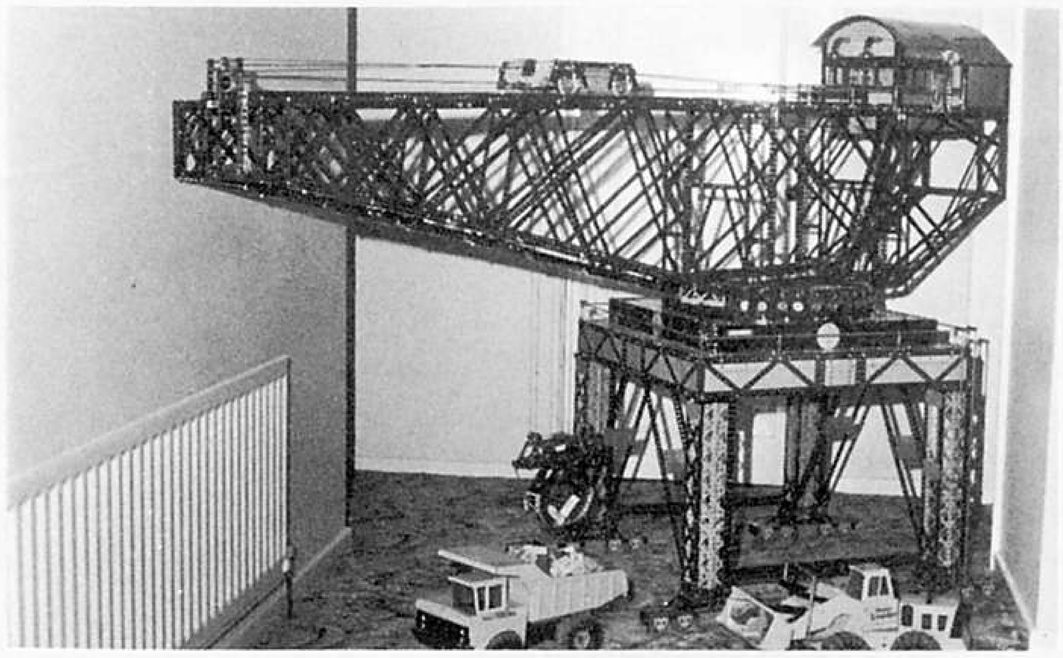
HUGE CRANE

Mr. A. Hibbs of Littleover, Derby, has sent me some photographs of a truly remarkable Blocksetting Crane he has recently constructed.

Using all-new parts in the latest dark blue colour scheme, Mr. Hibbs has spared no expense in his effort to build a Crane with a difference — it is over twice as big — in every dimension, as the 'normal' size model usually based on the example described in SML 4.

A glance at the accompanying photographs will instantly convey the idea of immense size embodied by the model. It is 9 feet long and almost five feet high, dimensions so extraordinary in a Meccano model that it had to be assembled in the hallway of Mr. Hibbs' home — no other room would allow his camera to get a full view by his stepping back far enough to cover the entire construction in the viewfinder.

Three PDU's and a Marklin EU1072 power



The incredible size of the Giant Blocksetting Crane described here, is more readily appreciated by comparison with the large Tonka toys in the foreground.

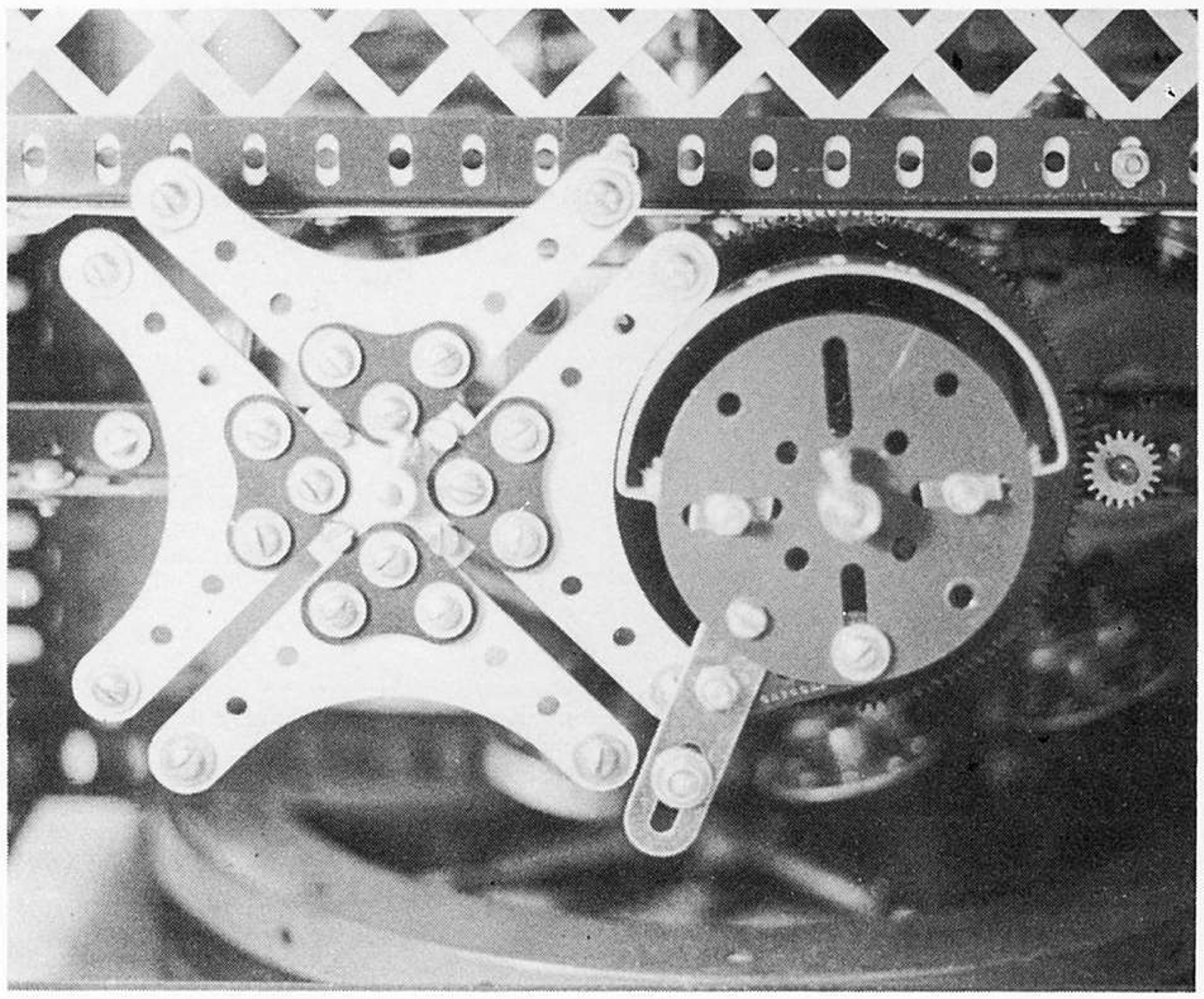
all major operations except tower travel, this being dispensed with due to the model's great weight, not that a model of this size could travel any distance in the confines of a normal house anyway! Yes it really is a remarkable model of a favourite subject, made all the more astounding by the fact that Mr. Hibbs is but . . . 15 years of age!

MALTESE CROSS MECHANISM

CHRIS GOODWIN of the Solent Meccano Club has sent me details of an intermittent motion mechanism that permits only a periodic quarter-turn of the driven shaft for every complete revolution of the driving shaft. In the time between its quarter-turns, the driven shaft is 'locked', ie it cannot rotate in either direction. Because of its appearance, it is called a Maltese Cross Mechanism.

The 'cross' itself is easily assembled by bolting four Flexible Gusset Plates as shown to a Bush Wheel, being careful to adjust the positions of the Plates so their edges are parallel to each other. 1" Corner Brackets are employed in the illustration to lend rigidity, and the Plates may be doubled or tripled to further add strength. The completed 'cross' is fixed to the driven shaft.

The driving arm is a 2" Slotted Strip carrying a Threaded Pin which engages the slots in the 'cross'. It is supported by a 2½" diameter Face Plate and given a slightly skew alignment as shown to obtain the best operation. Some experiment may be necessary to obtain satisfactory results with this, and also with the positioning of the Threaded Pin in the slot of the 2" Slotted Strip. A 4½" x ½" Double Angle Strip is given a near—180 degree curve and affixed via its lugs, Fishplates and Angle Brackets to the Face Plate. The curve should fit the concave section of the Flexible Gusset Plates to prevent the 'cross' rotating while the driving arm is not engaged in a slot.

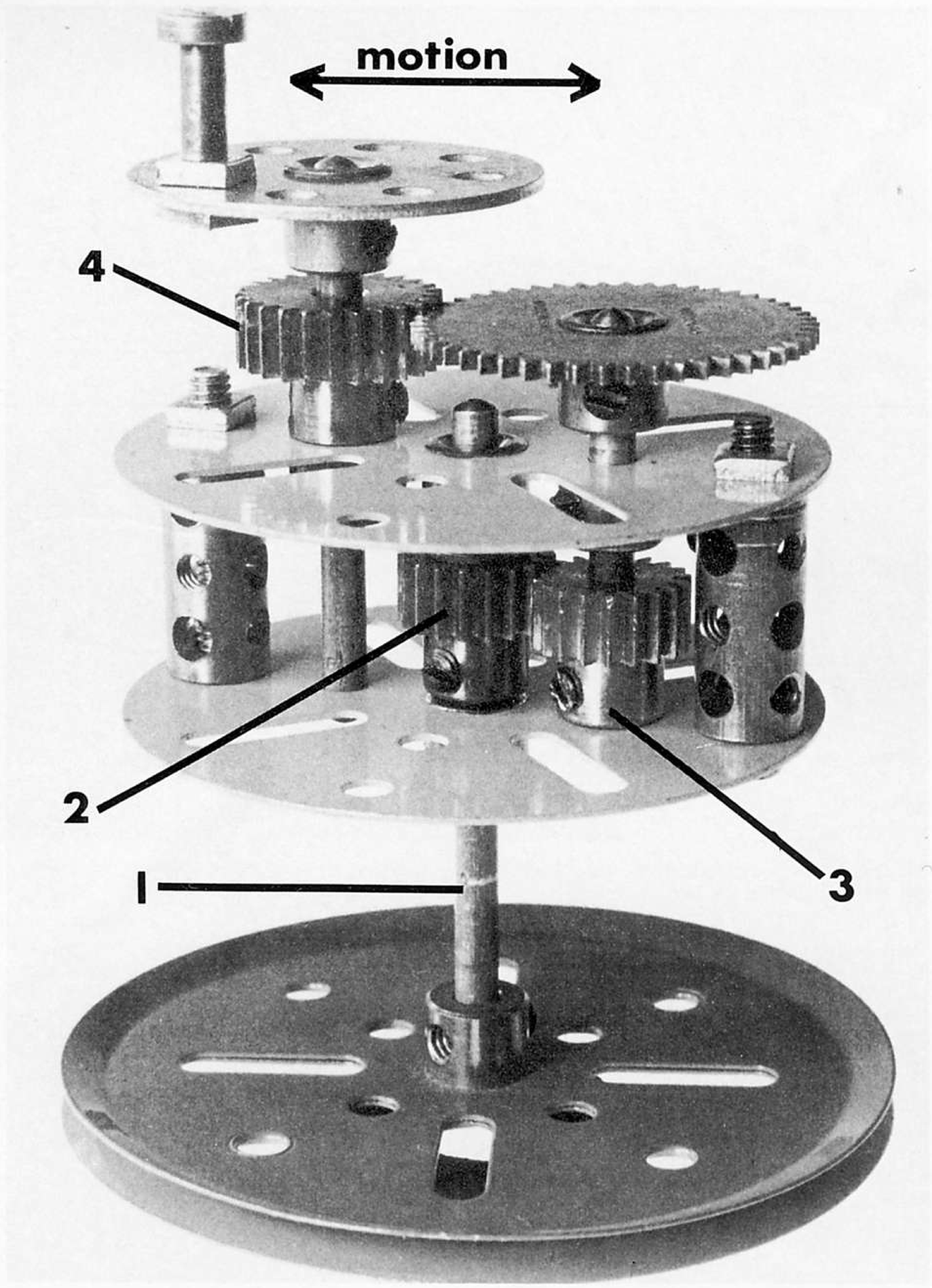


STRAIGHT-LINE MECHANISM

MR. BOB Hauton of Lincoln has suggested the following compact mechanism which serves the function of converting rotary motion into linear motion.

Construction of the demonstration unit is best commenced by first connecting two Face Plates by two 1⅛" Bolts, using a Coupling and two Washers on each Bolt shank for spacing purposes. A 3½" Axle Rod 1 is passed through the bosses of the Face Plates and is held in place by a firmly fixed ½" Pinion 2. The lower end of the Rod 1 enters the boss of a 3" Pulley, acting as a base. The Pinion 2 engages with another 19t Pinion 3, held on a 2" Axle Rod which carries at its upper end a 50t Gear Wheel as shown. This in turn meshes with a 25t Pinion 4 fixed to a 3" Axle Rod, journalled in the two Face Plate discs. The upper extremity of this 3" Axle Rod supports a Bush Wheel, to which is affixed a Pivot Bolt.

When the Face Plate 'cage' is rotated about the 3" Pulley base, the Pivot Bolt will describe a linear motion, to and fro. Mr. Hauton points out that the motion is not at an even speed throughout, but if this feature was of importance it could be achieved by making use of Swashplate movement.



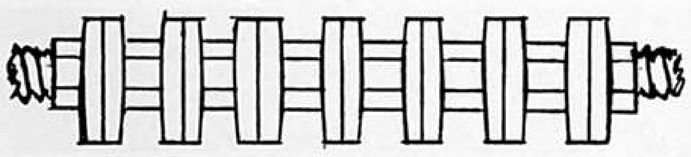
TRACTION ENGINE CANOPY SUPPORTS

'FEATURES lacking the 'authentic' touch in a Meccano Showman's Road Locomotive' writes Bert Halliday of London, 'are usually the normal 'twisted' brass canopy supports. On most Meccano models they are often represented by Axle Rods encased in Washers, or sometimes, Couplings; the latter giving the 'brass' effect but being more costly.

With the recently-introduced 'brass finish' Hexagon Nuts and Washers, something more visually satisfying can be produced, at least in the case of the main canopy supports. Simply fit alternate Hexagon Nuts, then two 'brass-finish' Washers with their slightly convex faces outwards, along appropriate lengths of Screwed Rod. The number of Washers spaced apart by Nuts, and/or even the number of Nuts themselves, may be adjusted to suit the scale of the model.

During further experimentation with this idea it was found that the fitting of three 'stacked' Washers (end ones convex face outwards) resulted in a perfect mesh with the teeth of the Multi-Purpose Gear Wheel part 27f. In this form the unit is, in effect, a compact, circular Rack Strip which can be built-up to virtually any length required depending only on supply of Screwed Rods, Washers and Hexagon Nuts; and to which a Multi-Purpose Gear Wheel can be meshed at any angle.

With this idea, lengths of Screwed Rod shorter than 3½" overcome the drawback of the normal Meccano Rack Strip part 110 which is often too long to fit in a rack and pinion steering unit on an average size model.'



Mr. Halliday's suggestion for Traction Engine Canopy Supports using Hexagon Nuts and Washers on a Screwed Rod. If using this idea in its Rack Strip form it is advisable to adjust all Nuts so their faces are parallel.

MECCANO DEALER RETIRES

AFTER 34 years of retailing Meccano sets, spares and motors, Mr. Charles Shepherd, proprietor of B. Duckworth & Sons Ltd. Blackburn, has decided to call it a day.

His shop, which will close at Christmas 1980, has sold Meccano ever since it first went on sale in the early 1900's. Mr. Shepherd himself took over immediately after the 1939-45 war and well recalls the early days of austerity measures. 'Meccano was very difficult to get then', he says, 'I had to take orders well in advance as most Meccano outfits had to go for export'. The supply situation gradually improved however and in recent years Meccano has been a fast seller over Mr. Shepherd's counter.

Although he looks only 50, Mr. Shepherd is in fact 80, and it is only the impending redevelopment of his property within Blackburn that has made him decide to retire. His years of selling Meccano to enthusiasts in the area have been happy times and it is with regret that he says farewell to his many customers. As a frequent visitor to his shop myself I can say that Mr. Shepherd's enthusiasm for the hobby has always been a welcome feature of his service and I'm sure I speak for Meccano enthusiasts everywhere when I wish him and Mrs. Shepherd a very long and happy retirement.

Retiring after 34 years as a Meccano Dealer, Mr. Shepherd's ready smile and efficient service will be missed by all North-West enthusiasts.

NORTH WEST FRONTIER

by Michael J. Walker

Some popular subjects for Meccano models . . .

AN increasingly common feature in the design of many Meccano models today is the use of accurate prototype information. In the search for greater and greater degrees of realism advanced enthusiasts are looking into text-books, leaflets, commercially produced specification sheets and even parent-company sales literature.

In the hobby of Model Engineering this is nothing new; where every single component has to be laboriously manufactured on home equipment it is only a sensible procedure to adhere to carefully-prepared plans. The Meccano enthusiast however invests far less time in any one model. The ready-made parts allow reasonably quick assembly and if an error in design is spotted, reassembly is relatively easy. Many constructors 'grow out' of their instructions books and design excellent models entirely without assistance, and by doing so they can be said to be further along the road to becoming an advanced user of Meccano. So it is then, that the mainstream of Meccano hobbyists have traditionally produced 'freelance' design models, most of the time they haven't really felt the need for anything but the most basic information concerning their chosen subject.

The increasing use, amongst ultra-advanced enthusiasts particularly, of offically produced plans listing specifications can be attributed in my view to a combination of three factors. Firstly, we are in the era of the huge Meccano model, these employ vast quantities of parts and take a great deal of time to complete. Secondly, in the process of improving the realism of their models bearing in mind the parts available and their sizes, constructors are giving more thought to scale proportions than previously. Thirdly, in my opinion the majority of Meccanomen enjoy interests in other engineering fields additional to Meccano. Such people take a delight in modelling the exact proportions of Traction Engines. Railway Locomotives and Trams etc. Involvement with Steam Railway, Tram Societies etc., makes it all the easier to borrow or buy literature on their chosen subject and this in turn has an influence on the design of the resulting Meccano model.

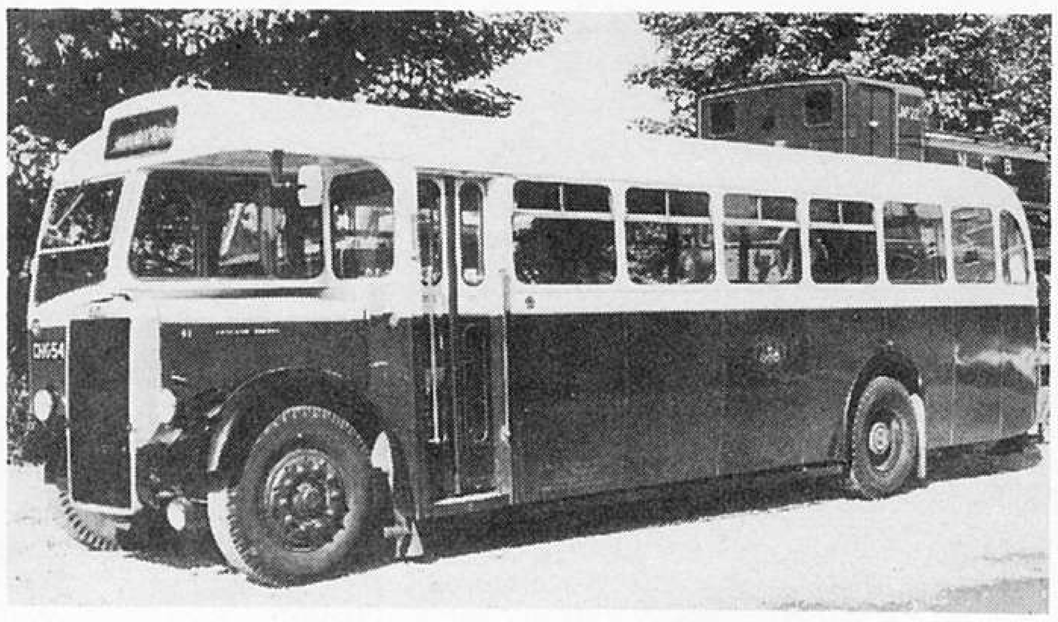
In the Meccano world, bigger generally means better because with more room to work in, a more complicated and capable mechanism can be installed. The exterior casing can support more detail and the left-over holes reduced in proportionate size, (although admittedly, there are more of them!). The bigger the model, however, the more important it is to sit down and plan its proportions and this is where prototype information can come in useful.

Most Meccano outfits contain only a limited number of different diameter Road Wheels and it is a fact that these parts have a marked effect on the success or otherwise of any wheeled model you plan to make. It's easy to imagine that a Meccano Car four feet long would need wheels of greater diameter than 2½", but such guesswork is not always so easy particularly if you are planning to make the most realistic model possible with your outfit.

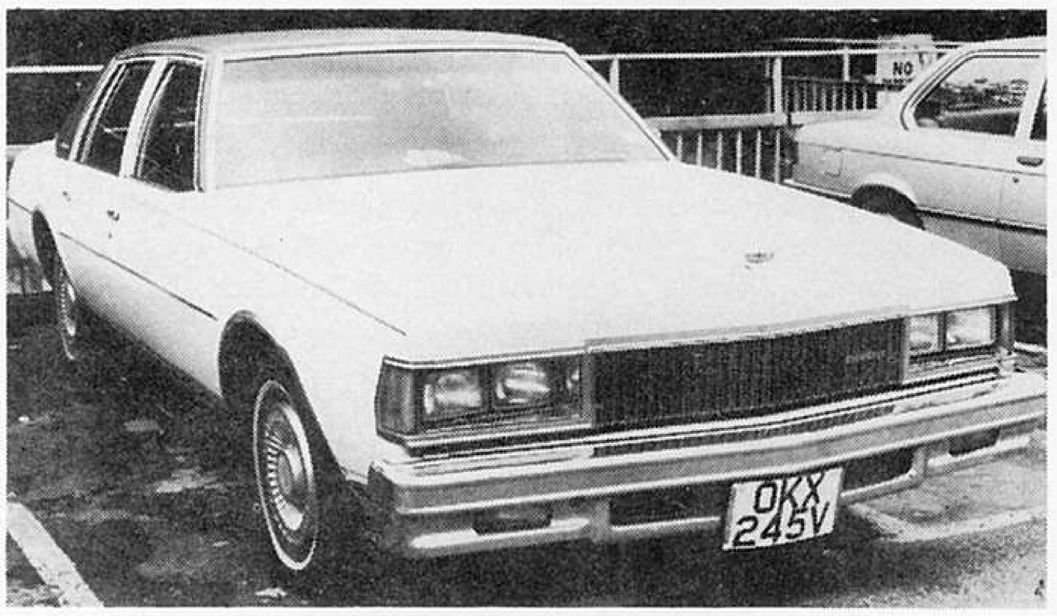
Careful scrutiny of a plan can also avoid that Meccanoman's nightmare, running out of parts at a strategic point in construction! Even enthusiasts owning copious quantities of Meccano are not immune to this as one can be certain that 'Blogg's Law' will try to come into operation at some point, when it will be suddenly found that the model needs more Handrail Supports / Loom Healds / Insulating Spacers than originally thought.

So for those of you who really want to get the best out of your advanced modelling I recommend a look at detailed specifications of your prototype whenever possible. Where to get them? Hobby shops can supply excellent commercially produced sheets of information on many popular prototypes, magazines frequently publish model plans according to the subject covered, even the manufacturer can be contacted directly. In this latter case I've known many examples where a most willing and helpful response has been forthcoming, extending at times even to invitations to view the factory and subsequent interest in the completed model. Two examples that come readily to mind are the Special Products Division, British Leyland, and JCB Excavators Ltd. Failing any of these, it is not unknown to actually go out looking for an example of your chosen subject with a tape measure! A rich variety of subjects abound all around us, all of which can be accurately reproduced in miniature using Meccano.

In the hands of enthusiasts Meccano is not a toy, it is a modelling medium of unsurpassed capability, design and potential. Realism in construction, both in interior mechanics and exterior appearance, is more than ever demanded by the discerning modeller today and it is in the pursuit of this, that accurate prototype information is being employed on an ever greater scale. So if you'd like a Cadillac but haven't got one, why not measure your neighbour's and build an accurate representation in Meccano? At least then, you won't have any parking problems!

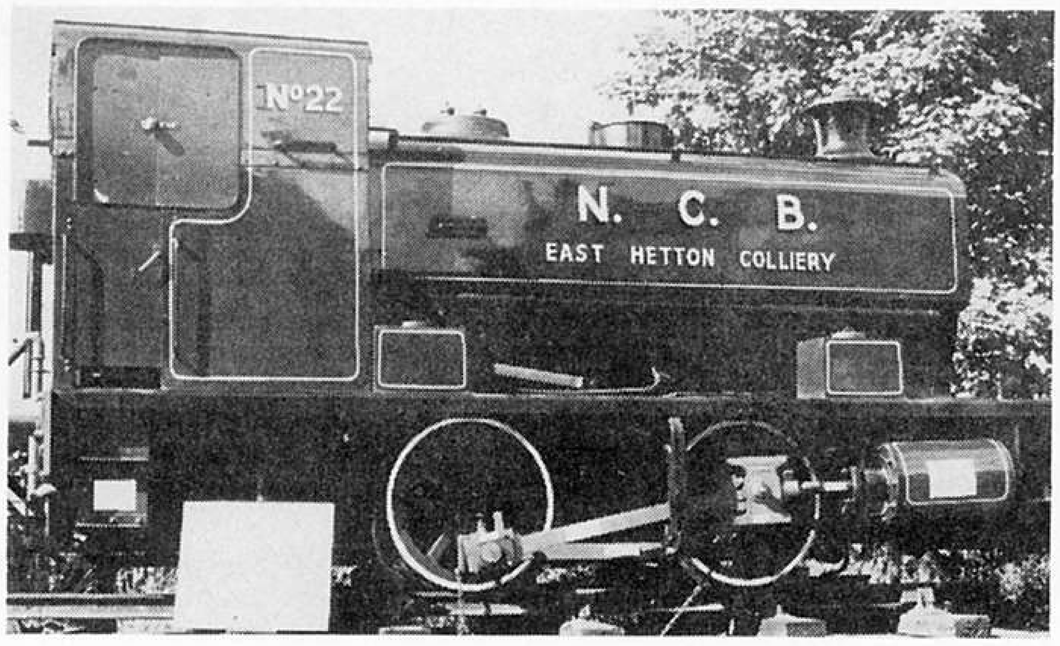


A single-decker Leyland Diesel Bus seen at Ilkley, Yorkshire. Now out of service it is in the care of transport enthusiasts.



A Chevrolet Impala American Car, the angular lines of which lend themselves easily to modelling in Meccano.

Always a favourite subject, a Locomotive. This Barclay 0-4-0 is in transit to a Model Exhibition.



A superb subject for a Meccano model, a modern Mobile Crane.

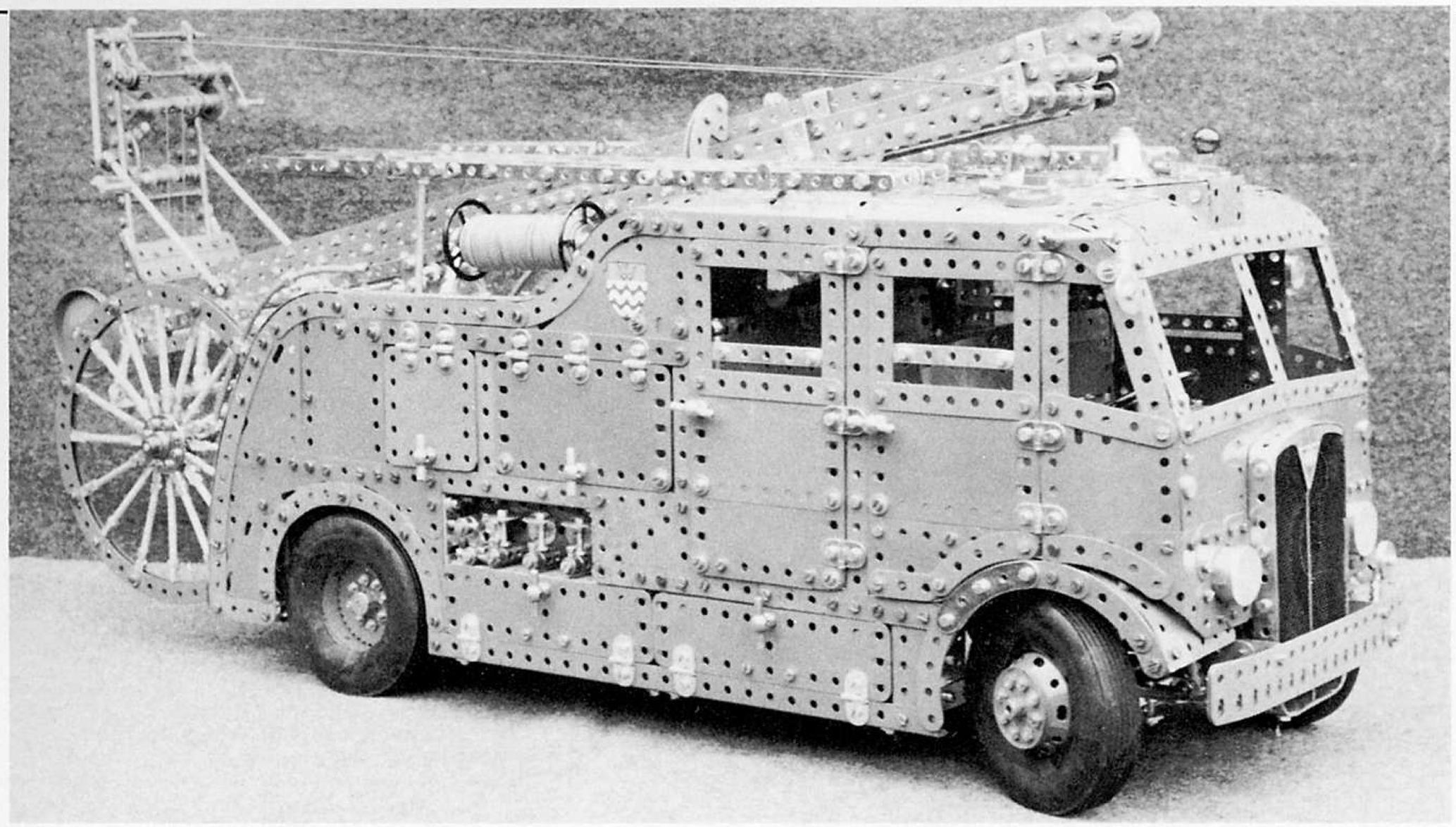


Fig. 1 Offside 3/4 view of the fine Pump-Escape model by Adrian Ashford. Note use of Contact Studs for side lights and radiator filler cap.

A.E.C. MERRYWEATHER PUMP-ESCAPE

THIS is a model of the Merryweather dual-purpose pumping appliances supplied to the London Fire Brigade in the early 1950's. They were based on the A.E.C. Regent Mark III chassis, powered by an A.E.C. A218 9.6 litre 6-cylinder diesel engine, developing 125 b.h.p. at 1800 r.p.m. Transmission was via a clutch and 4-speed and reverse crash gear-box. A power take-off drove a centrifugal pump capable of delivering up to 1000 gallons of water per minute.

A dual-purpose pumping appliance is one which is self-propelled and carries a built-in pump, water supply and hose-reel equipment. It can carry a 30 ft. or 35 ft. extension ladder as the main ladder, in which case it is called a pump, or it can carry a 50 ft. wheeled escape as the main ladder, as is the case with this model, in which case it is called a pump-escape.

The Meccano model is constructed to a scale of 1¼ inches to 1 foot, this being dictated by the diameter of the road wheels, and the Circular Strips used for the carriage wheels on the wheeled escape. Using photographs obtained from London Fire Brigade, every effort has been made to reproduce the features of the real appliance as accurately as possible.

All locker and cab doors open, the latter being fitted with vertical sliding windows. The cab incorporates seats for the driver and officer in front, and four crew-members behind. There is an open locker compartment above and behind the crew's seat at the back of the cab, and a large locker behind the cab goes right through the model from one side to the other. Various brass parts and ¾" Washers are used to represent the pump inlets, deliveries and controls, these being duplicated on each side. The new Road Wheel Centres are used as headlamps, both of these fitting precisely into the circle formed by bolting four 1" Corner Brackets together to form a square. The Centres are attached to the front of the model via Fishplates bolted to the holes normally used to hold the complete wheel assembly together. 12 V. 'Grain of Wheat' bulbs, (obtainable from any good model railway shop), fit in the centre holes of the Wheel Centres, making working headlamps. A 'lens' is provided in each case by suitably-sized discs of celluloid. Working rear lights are also fitted, using red 'Grain of Wheat' bulbs.

The flashing blue lights are readily-available 6 V. 0.25 A. bulbs painted blue with poster paint prior to varnishing, which prevents the paint rubbing off and also gives the bulbs a

Constructed and described by ADRIAN ASHFORD

Photographs by PETER OSBOURNE

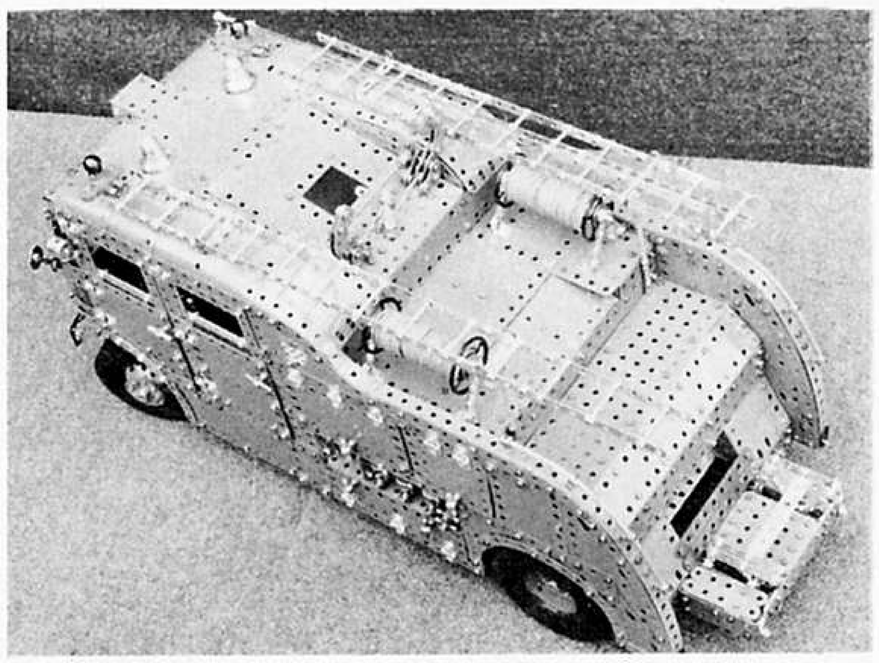


Fig 2. View looking down on model with escape removed, showing roof detail. Head rest and head securing gear are situated immediately behind small window in cab roof.

shiny, transparent appearance. The bulbs are screwed into the now-obsolete part 610 Bulb Holders, bolted to the cab roof. These, together with four Plugs, part 612, have been painted red for the sake of colour uniformity with the rest of the model. A simple electronic flasher unit flashes the lights to produce a realistic effect. The dummy bells on the cab roof are silvered-plastic Christmas tree decorations which were found to be just the correct size. The small spot lamp immediately in front of the cab door is formed from a Chimney Adaptor, on a swivelling mounting made from an Angle Bracket lock-nutted to both it and the window frame. On the prototype this was used for looking for house numbers in the dark. The small window just above the front nearside wheel arch was to assist the driver to see the kerb. Both these features are carried on present-day appliances though the spot lamp is hand-held inside the cab and shone through the windscreen.

The distinctive slight upward slope to the top and bottom of the windscreen is obtained by placing four 2½" square Flexible Plates overlapped with their slotted holes vertical to form a compound 8½" x 2½" flexible plate across the front of the model. The centre pair of plates, the 4½" Strips forming the bottom of the windscreen and the 3½" Strip centre division are pulled up in the centre of the top row of slotted holes thus producing the desired effect.

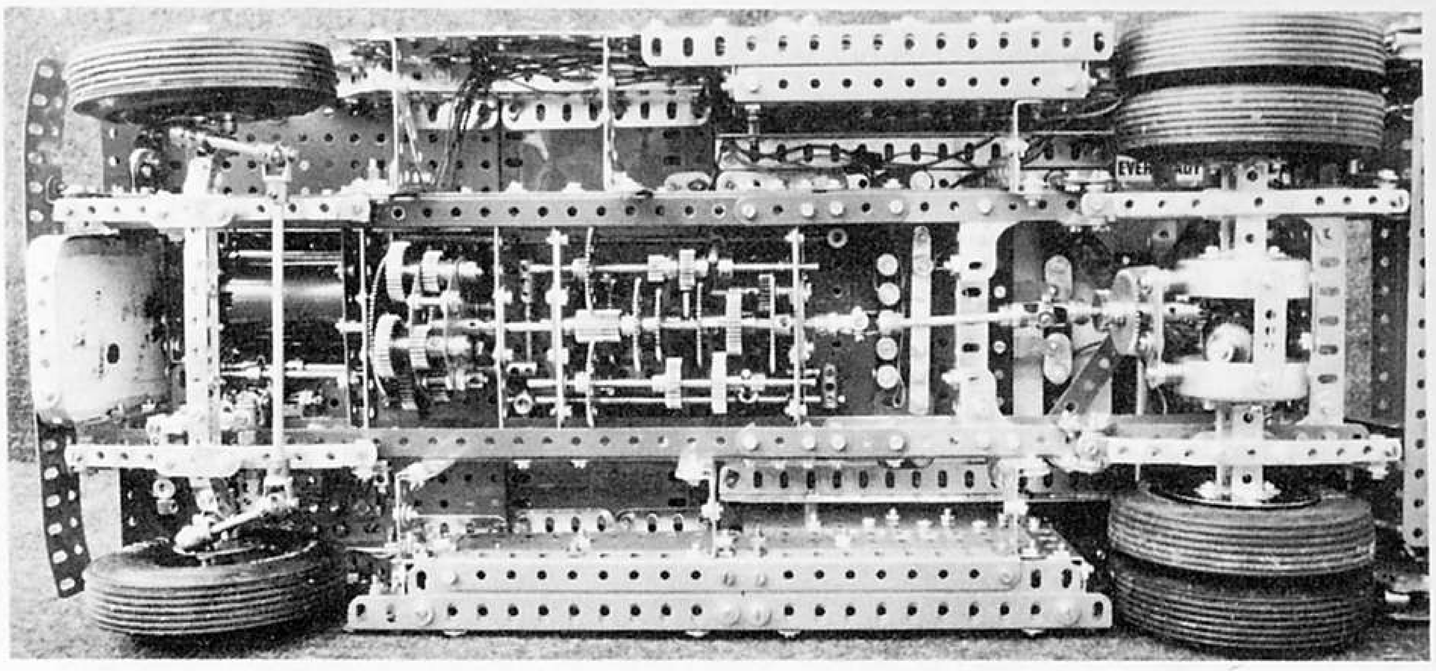
The chassis is fitted with working steering and leaf-spring suspension. Narrow Strips are employed in the construction of the springs, as even on a model of this size they are more in scale than standard Strips. Due to the sheer weight of the model, a very powerful non-Meccano 12 V. DC motor has been incorporated which drives the model at a good speed through a centrifugal clutch and a four speed and reverse gearbox of my own design, and an all-bevel differential on the rear axle. The gear lever works in an H-gate in the cab floor, the section around the gear lever being bolted to the chassis, the remainder of the cab floor forming an integral part of the cab. The fifth position, (reverse), is obtained by lifting the gear lever and pulling it back over the second gear position. The gear lever has to be put in a neutral position before this can be done, and matters are so arranged that reverse and a forward gear cannot be selected simultaneously.

Large WRI tyres on Boiler Ends are used for the road wheels. 2" diameter Sprocket Wheels, which *just* fit inside a Boiler End with a bit of persuasion, are used for the front wheel bearings because of their large bosses.

The model draws its power from thirteen HP 11 size rechargeable nickel-cadmium batteries, nine fitted in a Meccano Battery Box located inside the body, and the other four under the full-width rear seat. The batteries deliver ample power for the lights and motor and an advantage is that the model is able to run free of a trailing lead.

The wheeled escape is a completely separate model in itself and was in fact built before the appliance on which it is carried. As with the real thing, it can be slipped and pitched easily and quickly, and when fully extended attains a height of approx. 62½ inches, a scale height of 50 feet. The ladder is in three sections, a main ladder and two extensions. The method used to make the sections slide inside one another is a complete break-away from the method normally used by Meccano modellers. The ladders slide between the groove of a ½" Pulley and the short lug of a 1½" x ½" Angle Bracket. As can be seen from the accompanying illustrations, the sections go completely down inside one another when the ladder is fully retracted (or 'housed' to use the correct term).

The Strings (sides) of each ladder section are made from a double thickness of 12½" Perforated Strips butt—joined to form 25" compound Strips. Screwed Rods are employed for the Rounds (rungs) of each section. The complete ladder is mounted on a sliding carriage which enables the angle of elevation to be adjusted as required. The winch handles for operating the carriage and extending the ladders are mounted on the levers, the framework composed of Narrow Strips and Screwed Rods



Underside of model showing chassis detail. Note built-up front axle of correct shape and section.

attached to the Heel, (bottom) of the main ladder at a very slight acute angle. The large 16-spoke carriage wheels are built-up using Circular Strips for the rims, 8-hole Bush Wheels and Wheel-Discs for the hubs, and 2½" Axle Rods with Rod & Strip Connectors for the spokes.

The escape is mounted on the appliance by means of a special mounting at the rear. To reproduce this correctly I had to cut two special quadrants from sheet metal which are bolted vertically to the underside of the escape carriage. The head of the ladder rests on the headrest on the rear of the cab roof and is held in place by a pair of movable jaws called the Head Securing Gear, (see fig. 2) which is operated by a lever mounted inside the cab roof above the open locker compartment already mentioned.

Readers may be interested to know that wheeled escapes are still extensively used by the London Fire Brigade. At the time of writing there was one pump-escape at each of the Brigade's 114 stations; though gradual replacements of wheeled escapes with 45 ft. extension ladders commenced recently.

The short ladder carried on gantries on the nearside of the model represents the first floor ladder and the pair of ladders similarly supported on the off-side represent the two hook ladders. The sides of these ladders are made up from Narrow Strips.

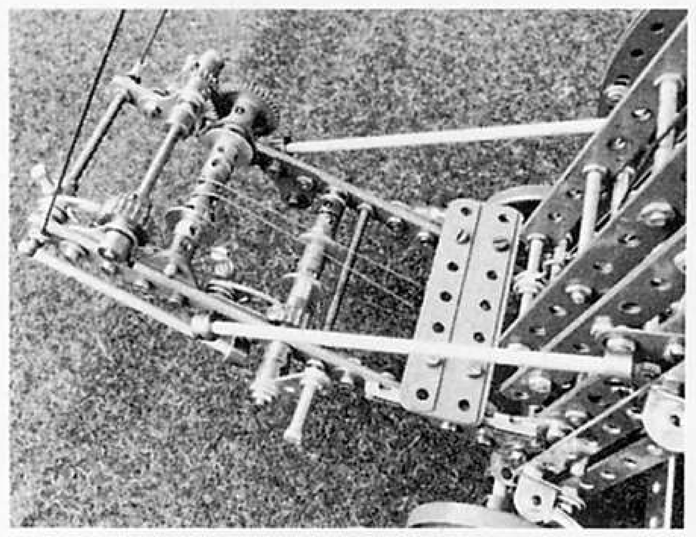
Where only two parts are joined together, extensive use has been made of a method of fixing using a long Grub Screw with a Nut on each end. This arrangement looks very neat as there is only the thickness of the Nut protruding on each side.

Sharp-eyed readers will have noticed a few red Strips and 1" Corner Brackets in the model. Wherever I felt that green parts looked a little obtrusive in a large area of red, as for example around the headlamps, I took the liberty of spraying some zinc-plated parts a matching red, and used these instead of the green parts. No special preparation was used prior to spraying, so the parts can be easily restored to their original finish.

A few non-Meccano and non-standard parts have been used in the model and these include odds and ends for the radiator, the WRI tyres, the previously-mentioned motor, steel fishing twine for the carriage and extension cables on the escape, and two special quadrants with three notches, cut from sheet duralium to correctly reproduce the type of escape mounting at the rear of the appliance. Long Screwed Rods have been cut in half, into non-standard lengths, to make rungs for the first floor ladder and the middle extension of the escape.

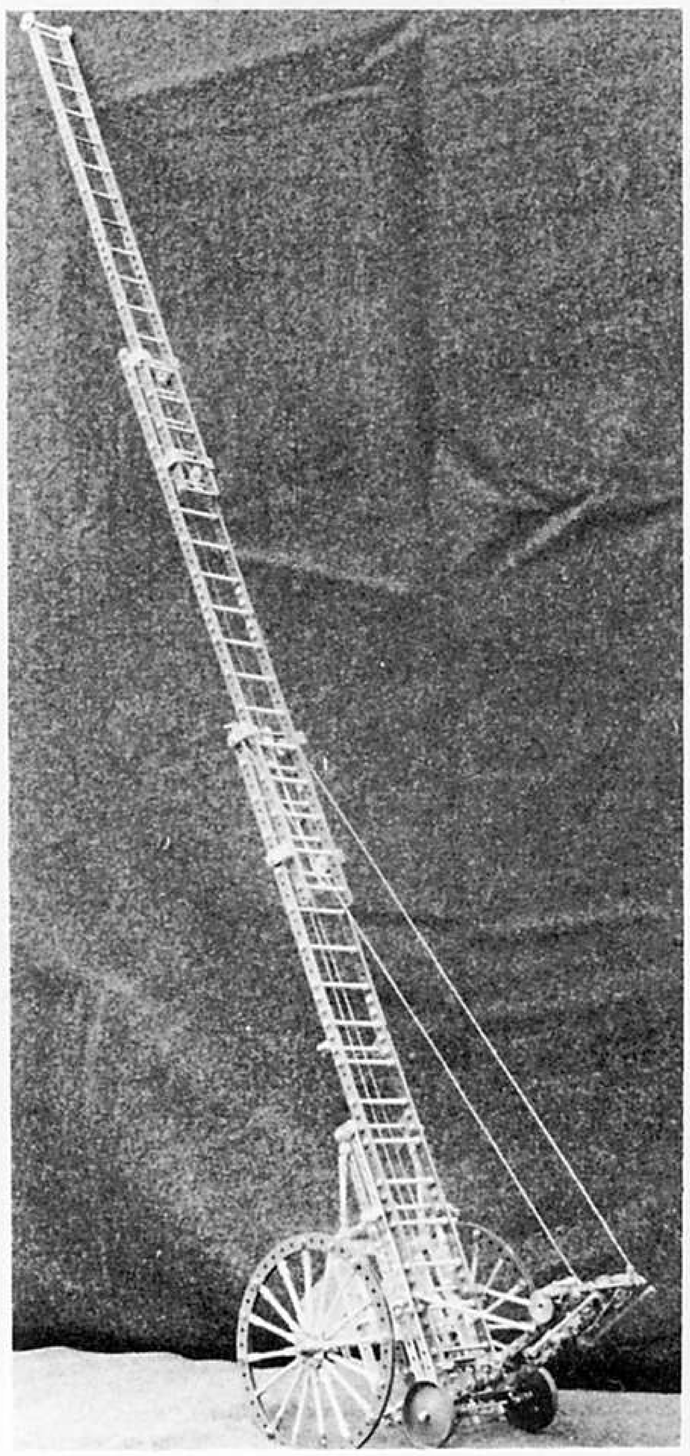
For the statistically-minded the model is approx. 9½" wide, 12" high, 32" long including the escape, and weighs 37lb complete with all ladders and batteries.

In conclusion I would like to express my thanks to several members of the London Fire Brigade, in particular Assistant Divisional Officer George Lulham, for information which was not discernible from the prototype photographs in my possession, and which has enabled me to incorporate authentic extra detail into the model. Additionally I would like to thank Peter Osbourne, Station Officer of Green Watch at Plumstead Fire Station, for taking the photographs used to illustrate this article.



Close-up view of the levers, with winding drums for the extension and carriage cables. A 'Crane' winding drum is employed for the carriage cable, and the extension cable shaft is driven by means of standard Meccano pinions cut down to ⅛th" face for improved realism.

View of escape in its almost fully extended position.



PROTOTYPES

by Bernard Dunkley

THE DEMAG H241

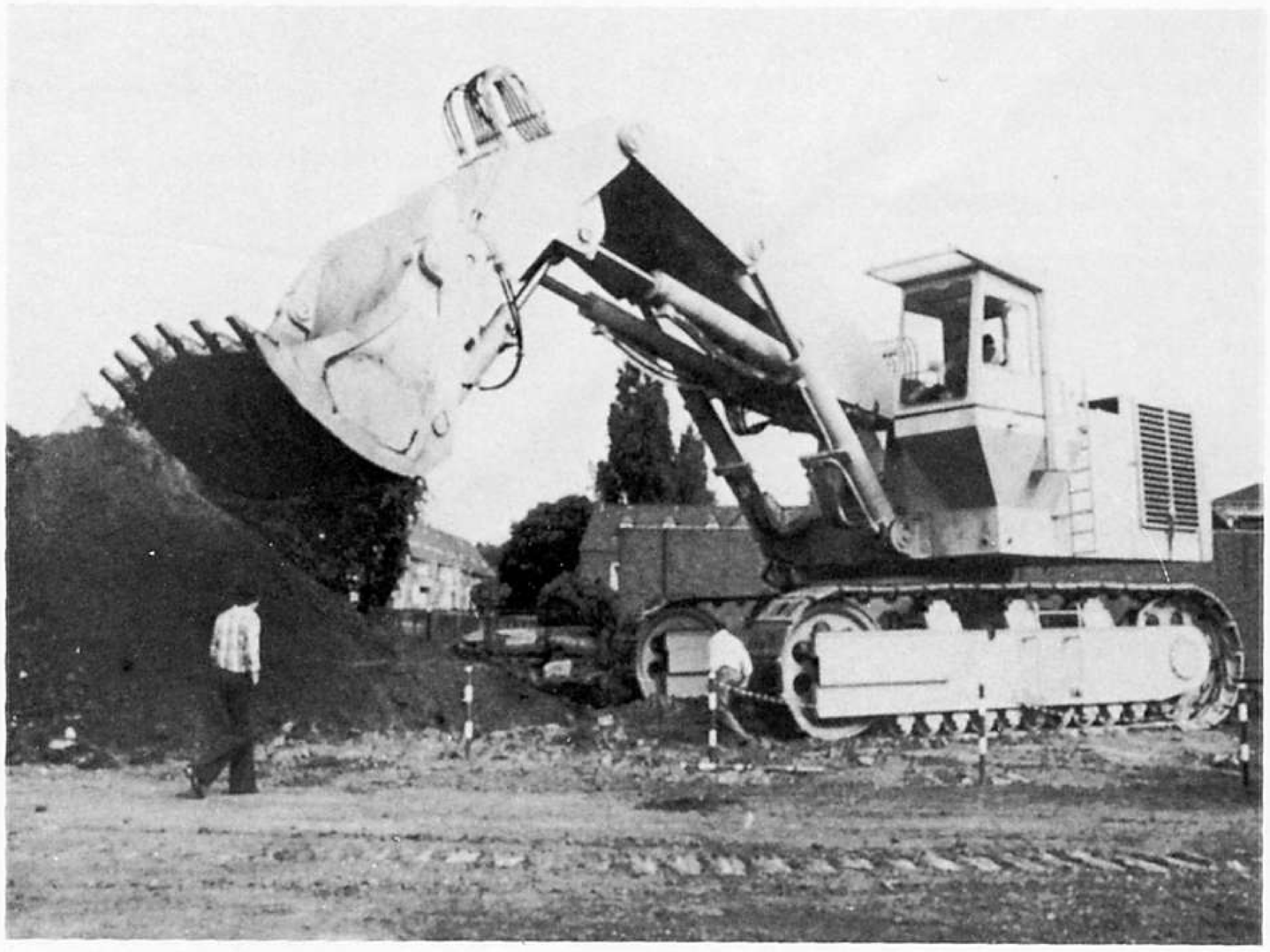


FIG. 1: The mighty Demag H241 hydraulic excavator.

IN recent 'Prototypes' pages I have described the various products of a single manufacturer, but this time I am specialising even more, because the subject is one product from one firm, and it is big enough to deserve an article on its own.

The device shown in Fig. 1 is the Demag H241, the biggest hydraulic excavator in the world. This leviathan of an earth mover has only recently been brought into existence. When I first heard of it in 1978 and asked the manufacturers, Mannesmann Demag Baumaschinen of Dusseldorf, West Germany, for details, they were not ready to release any pictures or information. However a year or so later they were happy to let me have some data and photographs of their unique monster.

Many Meccano modellers have successfully simulated hydraulic movement in their models, and for them I hope the H241 provides an interesting challenge. The jib consists of separate huge hinged sections and there is a hinged bucket. Fig. 2 shows clearly how these are hydraulically operated.

Here are a few technical details: The H241 weighs approximately 551,000 lb and its GM V16 149T supercharged water-cooled diesel engine propels it at 1½ miles per hour. The fuel tanks hold 1110 gallons, which the H241 uses at a rate of about 42 gallons per hour.

The length from the rear of the bodywork, (engine housing) to the front of the track is 33 ft. 8 inches, and the height to the cab roof is 21 ft. 7 inches. The overall height of each track is 7 ft. 7 inches. The maximum reach of the lip of the bucket is about 39 feet forward from the cab front. The overall width of the tracked base is 21 ft. 7 inches and the body is about a foot narrower, offset about 2 feet to the left.

Fig. 3 shows the Demag H241 with its body slewed through 90 degrees, in the process of filling a dumper truck with earth and rubble. This illustration gives a good clear view of the cab exterior details. Note the manner in which the bucket splits in order to discharge the load.

What is very obvious from both Figs. 1 and 3 is the way the H241 dwarfs all its surroundings. If you are planning to construct a model of hydraulic excavator, why not choose the biggest?

FIG. 2: Diagrammatic view of H241.

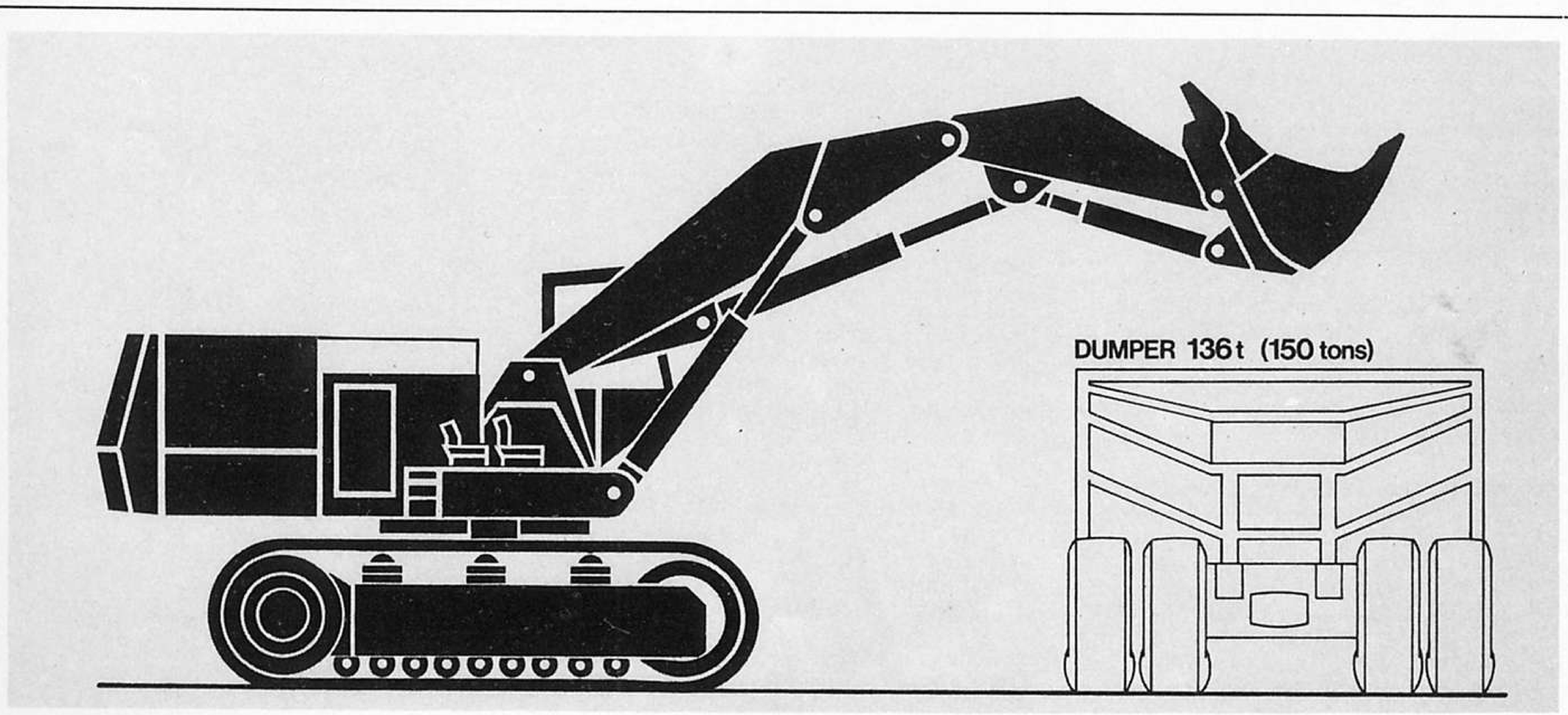
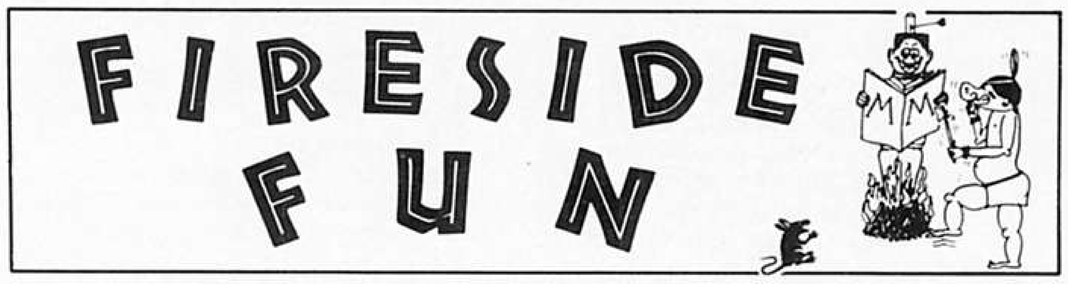


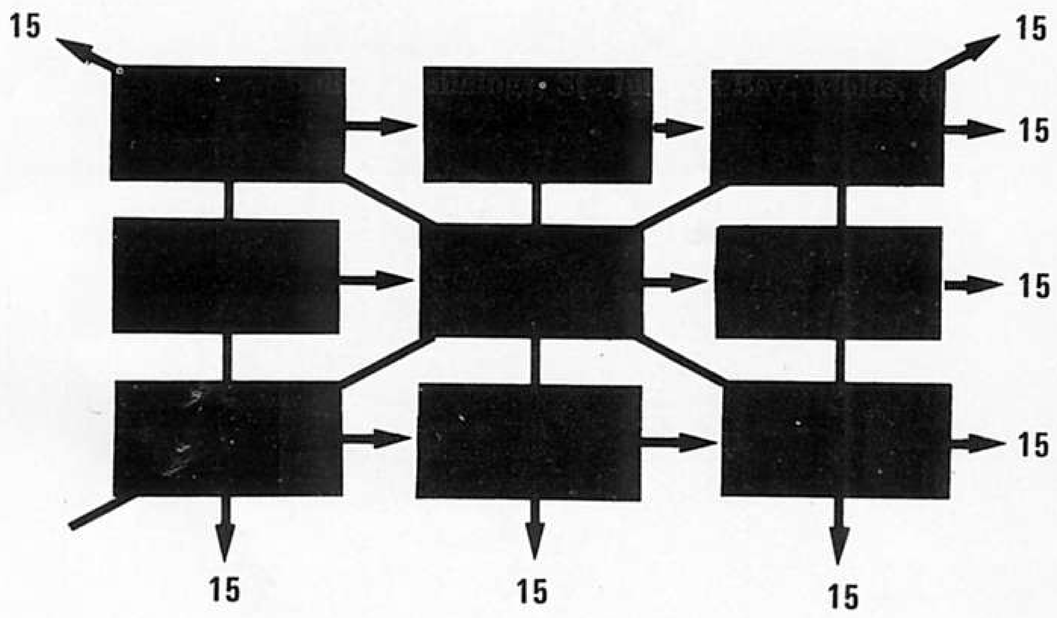
FIG. 3: Demag H241 loading a dump truck.



DOMINO PUZZLE

BY DENNIS HIGGINSON

The Puzzle:—Arrange these dominoes as follows:



So that their full totals add up to 15 in each direction shown.

Dominoes required:	4—4
Blank—2	5—1
Blank—4	3—4
Blank—1	1—2
Blank—5	3—6

Solution on page 38

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POSTBAG

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Dear Michael,

The Canadian Magazine is a weekly publication which is distributed throughout Canada with the Saturday edition of the local daily newspaper, (and hence is virtually identical in concept to the Sunday Telegraph Magazine, for example). Each week, one page is dedicated to answering readers' enquiries to all sorts of questions, with a column bearing the appropriate title, 'You Asked Us'.

Recently a correspondent wrote in to ask if the steam-driven clock installed in the suburbs of Gastown, Vancouver, in 1974, but which did not start operating until two years later, was the first such operational clock to be constructed. The magazine replied to the effect that it was the first, to their knowledge.

Your eagle-eyed correspondent, who spotted this item by virtue of spilling some of his breakfast coffee on the page in question, immediately realised that this was not correct and wrote in, informing the Canadian Magazine that Peter E. Kendall had constructed a Meccano steam clock in 1974. This had been the subject of a piece published in the December 1974 issue of the Junior Meccano Engineer, and I sent details of this along with my letter to back up my point.

The prospect of a reply seemed remote, but it did come, thanking me for my interest and acknowledging the fact that, in terms of time, the Meccano clock did beat the Gastown example, although accuracy and consistency of time-keeping were to be questioned. The reply ended with a note to the effect that my details would be filed for further reference, and further thanks from the researcher, Claudia Wilimousky, for brightening her day!

Chalk one up for Meccano!

Yours sincerely,
COLIN G. D. HOARE
Pointe Claire, Quebec.

Dear Michael,

Thanks for such a splendid Meccano Magazine, in my view it now has a new image. Please keep the Postbag feature going, there's nothing like reading other people's views.

I'm in full agreement with Dr. Cameron's views regarding the GMM SMLs. Art paper and the highest quality printing techniques are not required to describe a Meccano model adequately.

To prove this point, a few years ago I saw a model of the Trevithick Locomotive built from the instructions contained in the GMM SML 39 Booklet, at the Henley exhibition. I was aware of the snags involved in construction though it was a modest model.

This particular version on show was constructed with such perfect detail and worked as per the instructions in the leaflet. I was amazed to find that it had been made by a young boy, Julian Coles.

First-class drawings require little text in addition, a good example of this is the Crane Set Helicopter by Wally Hinson on page 59 of the April '78 Meccano Magazine.

Kind regards
ROGER LE ROLLAND
Stoke-on-Trent.

Dear Editor,

I wish to write concerning the comment by Geoff Wright on part colours in the July 1978 issue of Meccano Magazine.

By October 1927 there was a note in the manuals, 'Important,—Meccano parts will be supplied in colours unless customers ask specifically for nickelled parts'. (Of course this did not include parts such as Angle, Flat, & Double Brackets plus a few others such as Rack Segments, Triple-Throw Eccentrics etc.) My source is Book I 1027/5.

Around 1933/34 there would appear to have been a change in the shades of red and green as shown in the much lighter coloured motors, particularly the 'red with green levers'—and the Boiler which was light green with light red ends. One must also realise that 1934/35, (when blue/gold outfits were introduced), saw the continuing sale of red/green sets,—albeit with blue 3" and 1" Pulleys, Flanged Wheels and Bush Wheels, offered as an alternative with old-style manuals and lower prices.

For instance, the red/green set No. 7, still old-style numbers even,—retailed at 385/-, whereas its blue-gold counterpart Outfit L was 410/- at the same time. Accessory outfit 6a was 220/- and Ka 225/-. It seems odd that while red-green sets had blue Pulleys, the blue-gold had red 2" and 3" Pulleys, Eccentrics, Faceplates, Large Circular Plates, Sprocket and Artillery Wheels. This was the new lighter red, not the deep shade of 1928 on.

Manuals supplied with the blue-gold sets had 'red Blocksetter' covers similar to the '59's accessory set manuals, while the blue-gold accessory set manuals were orange and their box covers showed two boys with a 'Supermodel Car Chassis'—life size! My source is a Meccano book of products 1934-35, in colour of course.

Although the reds of the 37/41 period appear to be the same as the lighter red of early 33/34, bosses of wheels etc. were also painted whereas before they were not. However, the fact that the 37/41 red was neither as dark as the 1928 version, or as light as the 1926 shows that there was at least one other shade of this colour produced before the war. In all probability they produced the red-green and blue-gold coloured parts in tandem, and merely dropped the blue-gold in 1937.

In closing I would mention the lovely dark blue-grey that some Boilers, Sleeve Pieces and Chimney Adaptors sported for an all-too-brief period, I wonder if the Digger Bucket ever wore it? *

Needless to say I am very interested in the historical side of Meccano modelling and if anyone has any old items for sale or exchange, or if they merely wish to exchange correspondence, I would be delighted to hear from them. My address is 14 Leigh Road, Havannah, Congleton, Cheshire.

BRIAN WAGSTAFF
Congleton, Cheshire

* *It did-ED.*

Dear Michael,

Congratulations on your first issue of the M.M. I feel I must comment on the points made by Bob Bowley of the USA, (Postbag, April 1979), concerning electrical and electronic parts. I agree that much can be made of these and it is regrettable that parts of this type are no longer being manufactured by Meccano Ltd.

However, such equipment is readily available from model railway accessory manufacturers such as Hammant & Morgan, Fleischmann and even Fischer-teknik. Local radio/electrical shops stock a vast range of items at inexpensive prices. Having such a shop locally I utilise these parts to a great extent. Good examples are miniature switches, relays, diodes, capacitors, reed switches etc. In fact using this type of equipment can result in functional systems of some complexity. An example of this is an automatic tram-controlled switch system I have developed for my Volks Railway. Here, the two cars can pass safely at a passing-place because one will automatically wait outside the single-track station until the other has left. I also use Hammant & Morgan points motors for remote switching and operation of gearboxes and clutches.

I therefore feel that if a modeller has the necessary knowledge and ability there is nothing to stop him advancing his models along these lines. A regular electrical article in the M.M., such as has been featured in past issues of the Midlands Meccano Guild Gazette, I am convinced would be extremely interesting and thought-provoking. I am still looking for a remote-control proportional steering circuit of relative simplicity and perhaps someone can start off with that!

MICHAEL EDWARDS
Brighton, Sussex.

Dear Michael,

Looking through Geoff Wright's 'The Meccano Supermodels' book the other day, my attention was drawn by the illustration of old 'MM' covers on the back cover of the reproduced Meccano Book of Engineering.

Among the covers shown one or two looked familiar, and on checking I was amazed to find that although the Book of Engineering cover is clearly dated October 1928 by the printers code 1028/60, four at least of the pictured 'MM' covers appear on magazines issued in 1936!

Starting at the top right and working clockwise, numbers 1, 4, 7 & 11 are June, March, September and July respectively. They are identical, down to the style of shading around the heading which is quite individual. There are other examples on 'MM's I've seen but don't possess copies of, and of course No. 2 forms the basis for the illustrations on the covers of various 'Products' books.

I also noticed, without checking too deeply, two leaflets showing the wrong part numbers, i.e. listing part 7 as 8, in the parts required columns. One example is the Twin Elliptic Harmonograph leaflet,—can you spot the others?

Yours sincerely
BRIAN WAGSTAFF
Congleton, Cheshire.

Dear Michael,

I think congratulations are in order on your M.M. Very nice. Your remarks in your 'North West Frontier' article prompted me into feeling I should tell you of a piece of Meccano luck that recently fell my way.

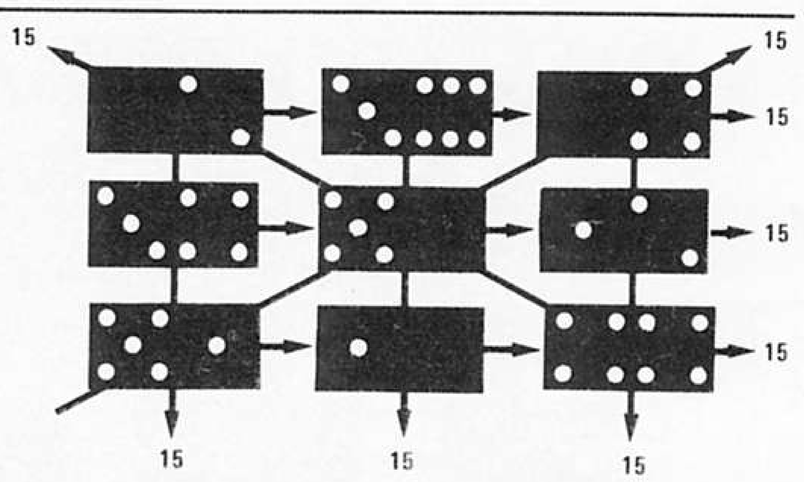
A friend of mine who constantly scans the 'articles for sale' ads. in the local paper, informed me that a No. 6 set was on sale for £17. After I had considered the price, which I thought wasn't at all cheap for such an outfit, plus the dangers of buying second-hand Meccano unseen, I replied to the effect that I wasn't interested. In spite of everything, my friend visited the advertiser and knocked the price down to £10, then gave it to me as a present.

When I received the outfit, I found that it was a huge PRE-WAR set 6, in solid oak cabinet with lock and key! The top of the cabinet was inscribed 'Meccano Set 6', and of course that's all it meant to the people who had sold the outfit. There were 54 12½" Strips, 52 5½" ditto. A few of the parts were of the 'Mechanics Made Easy' era, and additional treasures included 56t. Gears and 1½" Contrates with no holes. Best of all, I found some rare 20t Pinions of the long variety, all virtually 'mint'. I can't wait to incorporate these, or some of them, in my Meccanograph, just to see what happens!

BERT HALLIDAY
London SE15

Congratulations on your 'find', Bert. It just goes to show what vast stocks of Meccano there are available second-hand, if one is prepared to look for them. ED.

SOLUTION TO DOMINO PUZZLE ON PAGE 37



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DINKY ON THE ROAD AGAIN

WHEN the first advertisements for Dinky Toys appeared in 1934 few people could have predicted just what an impact this type of model would make on the toy market.

Dinky Toys originated as an extension of the famous Hornby railway range under the name Modelled Miniatures featuring various trackside accessories such as platform machines, station staff, passengers and motor vehicles, all priced between 2d and 4/-. The change to the trade name Meccano Dinky Toys heralded the arrival of the British die-cast model that was to change little over the next 20 years.

In the 1950's Dinky, like many other die-cast manufacturers, modernized their products with the addition of transparent windows, realistic suspension and opening doors, bonnets and boots, thus increasing the appeal of this type of toy.

Today, Dinky continues to be the name used synonymously when referring to small models and despite a changing world the basic philosophy behind the Dinky Toy concept continues in much the same manner as it did 46 years ago; that is an accurate scale representation of the real thing.

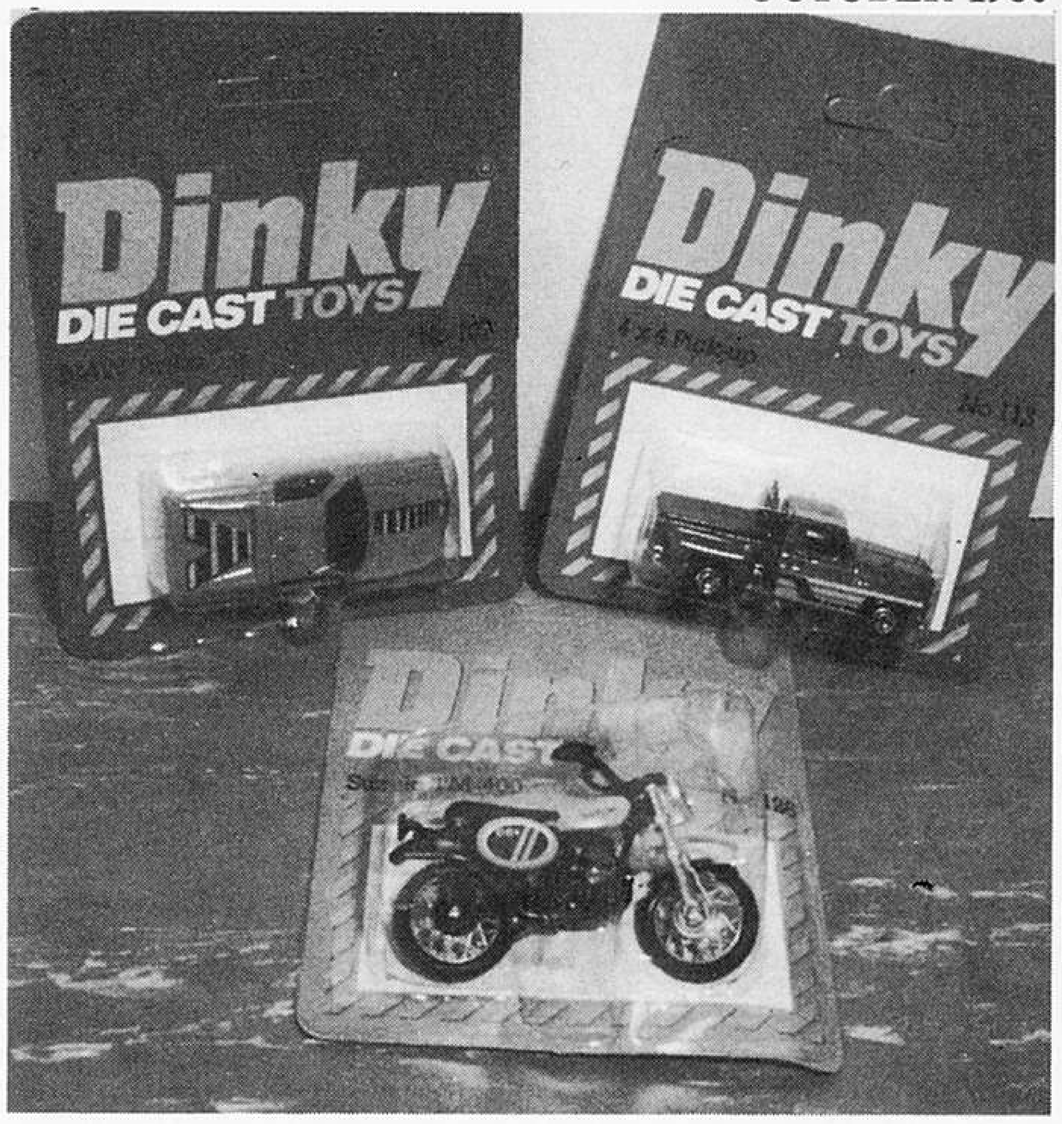
However, a part of that philosophy was the relatively low cost of the item and growing inflation has put the average die-cast toy outside the scope of the pocket-money market. To move back into the lucrative sector, Dinky has launched a new range of 'mini' Dinky's which will complement the traditional larger higher-priced range of models.

A total of 24 items make up this new 'mini' range, all priced at an affordable 59p each and comprising a variety of subjects including custom and sports cars, motorcycles and pick-up trucks.

Their small size, 6cm to 7cm in length, is no forfeit to detail, all have interiors and most of the models have working parts, chromed wheels and rubber-like tyres in the case of the motorcycles. A further 12 items will be joining the range early next year and there are plans to extend the larger series of models towards the end of 1981.

Thus Dinky Toys have gone full circle from the first small items aimed at the young boy with pocket money to this latest range which can boast the lowest retail price for this type of product currently on the market.

We hope to feature more on Dinky in forthcoming issues of the Magazine.



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